

Vol. III

TRANSCRIPT OF RECORD

(Pages 1025 to 1520)

Supreme Court of the United States

OCTOBER TERM, 1944

No. 296

PANHANDLE EASTERN PIPE LINE COMPANY,
ILLINOIS NATURAL GAS COMPANY AND MICHIGAN GAS TRANSMISSION CORPORATION, PETITIONERS,

vs.

FEDERAL POWER COMMISSION, CITY OF DETROIT, COUNTY OF WAYNE, MICHIGAN, ET AL.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE EIGHTH CIRCUIT

PETITION FOR CERTIORARI FILED JULY 28, 1944.

CERTIORARI GRANTED JANUARY 3, 1945.

VOL. III.
TRANSCRIPT OF RECORD.

United States Circuit Court of Appeals
EIGHTH CIRCUIT.

No. 12,466

**PANHANDLE EASTERN PIPE LINE COMPANY, A
CORPORATION, ILLINOIS NATURAL GAS
COMPANY, A CORPORATION, AND MICHIGAN
GAS TRANSMISSION CORPORATION, A COR
PORATION, PETITIONERS,**

vs.

**FEDERAL POWER COMMISSION, CITY OF DETROIT,
MICHIGAN, COUNTY OF WAYNE, MICHIGAN,
MICHIGAN CONSOLIDATED GAS COMPANY
A CORPORATION, AND MICHIGAN PUBLIC
SERVICE COMMISSION, RESPONDENTS.**

**PETITION TO REVIEW AND SET ASIDE ORDER OF FEDERAL
POWER COMMISSION.**

FILED FEBRUARY 6, 1943.

United States Circuit Court of Appeals
EIGHTH CIRCUIT.

No. 12,466

PANHANDLE EASTERN PIPE LINE COMPANY, A
CORPORATION, ILLINOIS NATURAL GAS
COMPANY, A CORPORATION, AND MICHIGAN
GAS TRANSMISSION CORPORATION, A COR-
PORATION, PETITIONERS,

vs.

FEDERAL POWER COMMISSION, CITY OF DETROIT,
MICHIGAN, COUNTY OF WAYNE, MICHIGAN,
MICHIGAN CONSOLIDATED GAS COMPANY,
A CORPORATION, AND MICHIGAN PUBLIC
SERVICE COMMISSION, RESPONDENTS.

PETITION TO REVIEW AND SET ASIDE ORDER OF FEDERAL
POWER COMMISSION.

FILED FEBRUARY 6, 1943.

Index, Volume I.

Original Print

Petition of Panhandle Eastern Pipe Line Company, Illinois
Natural Gas Company, and Michigan Gas Transmission cor-
poration to review and set aside an order of the Federal Power
Commission
Nature of proceedings as to which review is sought
Facts and statute upon which venue is based
Points on which petitioners intend to rely
Exhibit A, Opinion No. 80 of Federal Power Commission

a 1
b 2
f 6
g 6
q 20

Original Print

Order of Federal Power Commission reducing rates, September 23, 1942	rr	38
Exhibit B, Order of Federal Power Commission extending time within which to file new schedules of rates and charges, October 12, 1942	yy	43
Transcript of Testimony before Federal Power Commission.	1	45
Testimony	19	46
Manfred K. Toepfen	19	46
C. H. M. Burnham	337	101
Rufus M. Smith	421	136
Glenn G. Bartle	433	137
R. J. Wallace	443	138
Louis Fenn Sperry	452	139
Oscar William Morton	475	151
P. McDonald Biddison	491	159
O. W. Morton, resumed	622	200
C. R. Hinton	653	209
C. H. M. Burnham, resumed	753	238
Leith V. Watkins	856	265
Minutes of meeting of Board of Directors of Panhandle Eastern Pipe Line Company of September 3, 1930	896	285
David Friday	933	303
P. McDonald Biddison, resumed	982	331
Paul Brown Coffman	995	338
P. McDonald Biddison, resumed	1150	430
C. H. Hinton, resumed	1305	487
P. McDonald Biddison, resumed	1408	494
Leith V. Watkins, resumed	1470	509

Index, Volume II.

Louis Fenn Sperry, recalled	1493	521
Ralph E. Davis	1496	522
J. D. Creveling	1588	546
George S. Young	1664	578
Henry C. Lelin	1678	584
Howard S. Riddle	1682	587
Francis S. Haberly	1718	601
Fred A. Spitznagle	1811	633
George S. Young, resumed	1890	649
Robert S. Drew	1911	667
Francis S. Haberly, resumed	1933	672
Fred A. Spitznagle, resumed	1952	682
Daniel C. Green	1971	691
Walter C. Beckford	2016	706
P. McDonald Biddison, resumed	2119	712
Excerpt from Exhibit 62	2627	789
O. W. Morton, resumed	2864	892
Letter, O. W. Morton to G. J. Neuner, August 19, 1941	3142	996

Index, Volume III.

P. McDonald Biddison, resumed	3316	1049
Letter, J. D. Creveling to Leon M. Fuquay, July 23, 1941	2643	1053

	Original	Print
Letter, Leon M. Fuquay to J. D. Creveling, July 26, 1941	3645	1054
Telegram, Panhandle Eastern Pipe Line Company to Leon M. Fuquay, July 28, 1941	3646	1055
Exhibit 39-A, Statement relating to Reproduction Cost New of Plant, Property and Business of Panhandle Eastern Pipe Line Company, etc.	3785	1075
Rufus M. Smith, resumed	4113	1144
C. H. Hinton, resumed	4165	1174
Rufus M. Smith, resumed	4187	1179
Glenn G. Bartle, resumed	4352	1271
Louis F. Sperry, resumed	4560	1307
C. H. Hinton, resumed	4775	1421

Index, Volume IV.

C. H. M. Burnham, resumed	5939	1929
---------------------------	------	------

Index, Volume V.

Leith V. Watkins, resumed	6163	2037
Paul B. Coffman, resumed	6534	2211

Index, Volume VI.

Leith V. Watkins, resumed	7050	2514
Letter, Ralph M. Shaw to Frank P. Parrish, October 2, 1931	7385	2654
Paul B. Coffman, resumed	7451	2663
George S. Young, resumed	7933	2806
Henry C. Lehn, resumed	8037	2857
F. S. Haberly, resumed	8070	2874
Fred A. Spitznagle, resumed	8172	2921
Limitation Order L-31, "To Curtail Consumption of Natural Gas"	8272	2950
Exhibit A, Areas subject to prohibitions contained in paragraph (c) of Limitation	8280	2956
Robert S. Drew, resumed	8366	2998

Index, Volume VII.

Fred A. Spitznagle, resumed	8461	3050
George S. Young, resumed	8525	3062
Order of Securities and Exchange Commission In the Matter of Columbia Gas & Electric Corporation, et al.	8555	3078
Daniel C. Green, resumed	8558	3080
Robert S. Drew, resumed	8706	3169
Fred A. Spitznagle, resumed	8721	3185
Robert S. Drew, resumed	8741	3188
Leith V. Watkins, resumed	8887	3208
Order of Federal Power Commission denying application for Extension of Time for Compliance with the provisions of Gas Plant Accounts Instruction 2-D of Uniform System of Accounts and Commission's Order No. 73	9020	3235
C. H. Lewis	9023	3236
Leith V. Watkins, resumed	9136	3270

	Original	Print
William G. Maguire	9247	3300
Leith V. Watkins, resumed	9329	3351
David Friday, resumed	9349	3353
O. W. Morton, resumed	9364	3361
Charles W. Smith	9476	3411
Edward L. Dunn	9570	3433
Charles H. Hinton, resumed	9669	3478
C. H. X Burnham, resumed	9784	3533

Index, Volume VIII.

Leith V. Watkins, resumed	9838	3557
Report, P. McDonald-Biddison, Consulting Engineer, to J. D. Creveling, President, Panhandle Eastern Pipe Line Company, November 24, 1941	9890	3548
C. H. M. Burnham, resumed	9898	3592
Leonard Spacek	9928	3608
Letter, P. McDonald Biddison to Panhandle Eastern Pipe Line Company, April 8, 1942	9942	3616
P. McDonald Biddison, resumed	9977	3631
Paul B. Coffman, resumed	10076	3676
P. McDonald Biddison, resumed	10399	3553
Leith V. Watkins, resumed	10452	3882
P. McDonald Biddison, resumed	10534	3919
J. D. Creveling, resumed	10559	3933
Samuel Joseph	10659	3976
Statement relating to Production from Hugoton Field	10679	3987
Letter, O. W. Morton to Federal Power Commission, April 9, 1942	10698	3980
Letter, O. W. Morton to Federal Power Commission, April 11, 1942	10699	3990
J. G. Shattuck	10701	3991
Exhibits:		
1, Statement of operating Results of Panhandle Eastern Pipe Line Company and Michigan Gas Transmission Company, 1938-1940	10775	4012
Operating Results	10775	4012
Cost, and Cost Less Reserves, of Plant and Operating Results as of December 31, 1938	10777	4013
Cost, and Cost Less Reserves, of Plant and Operating Results as of December 31, 1939	10778	4014
Cost, and Cost Less Reserves, of Plant and Operating Results as of December 31, 1940	10779	4015
Working Capital Estimate, December 31, 1938-39-40	10780	4016
Working Capital Estimate Approximate Payroll Basis, December 31, 1940	10782	4017
2, Determination of possible Revenue Reduction of Pan- handle Eastern Pipe Line Company and Michigan Gas Transmission Company	10783	4018
3, Excerpts from Registration Statement of Panhandle Eastern Pipe Line Company filed with the Securities & Exchange Commission, February 12, 1937, with respect to Gas Reserves	10785	4019

4, Excerpt from Registration Statement of Panhandle Eastern Pipe Line Company filed with the Securities & Exchange Commission, November 13, 1940, with respect to Gas Reserves.....	10786	4021
5, Excerpts from Registration Statement of Panhandle Eastern Pipe Line Company filed with the Securities & Exchange Commission, November 13, 1940, with respect to Design, Construction and Maintenance of Property.....	10789	4025
6, Statement of Operating Expenses and Taxes at 100% Load Factor Operation.....	10791	4029
7, Statement as to necessary Price per M. C. F. at 100% Load Factor.....	10793	4030
8, Statement of estimated Effect of 100% Load Factor on earning Power of System.....	10795	4030
9, Statement of Factor affecting the Nature and Magnitude of reported Net Incomes.....	10796	4031
10, Statement showing Effect of Variation in accounting Practices on Reported Incomes of an Enterprise.....	10799	4034
11, Chart showing Relation of Yield of United States Treasury Bonds and Notes.....	10800	4035
12, Statement showing United States Treasury Bond Yields.....	10801	4037
13, Chart showing History of Yields of United States Bonds, 1920-1939.....	10806	4045
14, Average Yield of United States Treasury Bond.....	10807	4047
14-A, Securities & Exchange Commission Releases Nos. 2778 and 2834. — Findings and Opinion of the Commission in the Matters of Panhandle Eastern Pipe Line Company, et al.....	10808	4047

Index, Volume IX.

Order of Securities & Exchange Commission Denying Applications in Part and granting Applications in Part, Supplemental Order of Securities & Exchange Commission amending Findings and Opinion.....	10842	4087
17, Miscellaneous Data concerning Property and Operations of Panhandle Eastern Pipe Line Company.....	10844	4089
Schedule 1, Panhandle Eastern Pipe Line Company System Compressor Stations.....	10848	4090
Schedule 2, List of Communities receiving Service directly or indirectly from Panhandle Company including Population and Number of Customers as of June 30, 1941.....	10849	4091
Schedule 3, List of Industrial Customers receiving Service direct from Panhandle Company System, June 30, 1941.....	10853	4099
Schedule 11, Panhandle Eastern System Summary — Miles of Pipe by Sizes, June 30, 1941.....	10925	4101
30, Testimony of Rufus M. Smith.....	10958	4103
Schedule 2, Estimated Original Gas Content in the Texas Panhandle Field under Acreage constituting Reserves of Panhandle Eastern Pipe Line Company as of July 1, 1941.....	10986	4125

Schedule 3, Estimated Remaining Gas Content in the Texas Panhandle Field under Acreage constituting Reserves of Panhandle Eastern Pipe Line Company as of July 1, 1941	10987	4125
Schedule 5, Comparison of Open Flow Potentials in Texas Panhandle Gas Field	10990	4129
Schedule 6, Gas Acreage owned and under Gas Purchase Contracts held by Panhandle Eastern Pipe Line Company as of June 30, 1941	10991	4131
Schedule 7, Hugoton Production to Argus Natural Gas Company, Inc. by Panhandle Eastern Pipe Line Company, et al.	10992	4133
Schedule 8, Texas Production to Panhandle Eastern Pipe Line Company	10993	4135
Schedule 9, Hugoton Production to Panhandle Eastern Pipe Line Company	10997	4143
Schedule 10, Hugoton Production to Panhandle Eastern Pipe Line Company	11000	4149
Schedule 11, Analysis of Cumulative Production to Main Line to and including Fiscal Month of June 1941	11003	4155
Schedule 12, Comparative Statement of Production and Purchases from each District for the two Years ended June 22, 1940 and June 22, 1941	11004	4157
36, Testimony of Glenn G. Bartle	11010	4159
Schedule 3, Estimated Original Gas Content in the Hugoton Field, (Kansas, Oklahoma and North Texas Panhandle), under Acreage constituting Reserves of Panhandle Eastern Pipe Line Company as of July 1, 1941	11038	4176
Schedule 4, Estimated unmetered Gas from Panhandle Eastern Pipe Line Company Wells in the Hugoton Field Kansas, connected to Argus Natural Gas Company, Inc. as of July 1, 1941	11041	4181
37, Testimony and Exhibits, Market Value of Leases of Panhandle Eastern Pipe Line Co.	11047	4187
R. J. Wallace	11047	4187
Summary of Market Value of Leases	11064	4199
38, Basic Statistics used in calculating Interest, ad valorem Taxes and Operating Expense attributable to unused Capacity	12159	4203
39, Reproduction Cost New of Plant, Property and Business of Panhandle Eastern Pipe Line Company and subsidiary Companies as of June 30, 1941	12162	4206
Letter P. McDonald Biddison, Consulting Engineer, to Panhandle Eastern Pipe Line Company, August 29, 1941	12163	4206
Statement relating to Reproduction Cost New—June 30, 1941	12164	4207
Summary	12165	4207
39-A, Reproduction Cost New of Plant, Property and Business of Panhandle Eastern Pipe Line Company and subsidiary Companies as of June 30, 1941	13130	4208
Letter P. McDonald Biddison, Consulting Engineer, to Panhandle Eastern Pipe Line Company, August 29, 1941	13130	4208

Statement relating to Reproduction Cost New—June 30, 1941	13131	4200
Summary	13133	4209
40, Table showing estimated Main Line Sales, years 1941-1946, inclusive	13149	4211
41, Graph showing Sales and Gas Plant by Years, Panhandle Eastern Pipe Line Company and Subsidiary Companies ..	13150	4213
42, Testimony of C. H. Hinton relating to Future Capital Expenditures and Operating Expenses in Production and Gathering System West and South of Liberal, Kansas ..	13151	4215
43, Schedules presented in connection with the written Testimony of C. H. Hinton	13193	4244
Schedule 1, Additional Capital Expenditures required to produce and gather Basic Load, or Present Requirements	13194	4244
Schedule 2, Additional Capital Expenditures required to produce and gather Anticipated Increased Load	13195	4244
Schedule 3, Estimate of Operation and Maintenance Costs — west of Liberal Panhandle Field — Basic Load	13196	4245
Schedule 4, Estimate of Operation and Maintenance Costs — west of Liberal Panhandle Field — Estimated Future Load	13199	4251
Schedule 5, Probable Production from Panhandle Eastern's own Wells and Wells under Gas Contracts (Panhandle Field) during the Period July 1, 1940 to December 31, 1956	13202	4257
47, Panhandle Eastern Pipe Line Company and Subsidiary Companies, future Capital Requirements, Gas Transmission Facilities, Liberal Station and Eastward	13206	4257
48, Statement showing Balance Sheets per Books Panhandle Eastern Pipe Line Company and Subsidiary Companies, as at each December 31, 1930 through 1940 and as at June 30, 1941	13207	4259
49, Income Statement per Books — Period from April 1, 1932 to December 31, 1941	13210	4265
50, Statement showing Earned Surplus per Books, Period from Commencement of Operations to June 30, 1941	13212	4269
51, Statement showing Capital Surplus per Books, Period from September 1, 1930 to June 30, 1941	13214	4273
52, Statement showing Investment in Gas Plant as at each December 31, 1930 through 1940 and as at June 30, 1941 ..	13215	4275
53, Statement of Dividends paid on Class A and Class B Preferred Stocks from beginning to September 1, 1941 ..	13217	4279
54, Statement of Dividends paid on Common Stock from beginning to September 1, 1941	13219	4280
55, Statement showing Comparison of Sales and Revenue, Principal Industrial Customers, years 1939, 1940 and 1941 ..	13220	4281
55-A, Statement showing Comparison of Sales and Revenue Principal Industrial Customers, years 1939, 1940, and 1941 ..	13221	4283
56, Statement of Gas Produced, Period from April 1, 1932 to June 30, 1941	13222	4284
57, Statement of Gas Purchased, Period from April 1, 1932 to June 30, 1941	13223	4285

Original Print

58. Statement of Gas Revenue, Period from April 1, 1932 to June 30, 1941 and Schedule showing Detail of Sales to various Types of Customers, 1939 and 1940	13224	4287
Schedule 1, Statement of Gas Revenue, Period from April 1, 1932 to June 30, 1941	13224	4287
Schedule 2, Detail of Sales to Gas Utilities, years 1939 and 1940	13225	4289
Schedule 3, Detail of Sales to Industrial Customers, years 1939 and 1940	13227	4293
59. Statement of Gas Revenue by States, Period from April 1, 1932 to December 31, 1941	13229	4297
60. Statement showing Sales Agreements with other Gas Companies as at June 30, 1941	13230	4299
61. Study of Current and Future Trends in Commodity Prices and Wages, by David Friday	13238	4310
Graph showing Wholesale Prices from 1800 to 1940	13239	4311
Index Numbers of Wholesale Prices of Commodities by Groups	13241	4313
Commodity Price Indexes of Ten Countries	13247	4318
Statement relating to Tax Collections in the United States, from 1913 to 1942	13258	4328
Index Numbers of Wholesale Prices of all Commodities by Months, from 1890 to 1940	13263	4333
Statement relating to Wholesale Prices for Week Ended September 20, 1941	13264	4335
Graph relating to Average Weekly Earnings in Manufacturing Industries of New York State from 1914 to 1941	13266	4339
Graph relating to Average Hourly Earnings and Average Actual Hours per Week per Worker in twenty-five Manufacturing Industries from 1914 to 1941	13267	4341
Graph relating to Average Cost of Living from 1935 to 1939	13268	4343
62. Deduction from Cost of Reproduction New for Depreciation and Present Value of Plant, Property and Business as of June 30, 1941	13270	4345
Letter from P. McDonald Biddison, Consulting Engineer, to Panhandle Eastern Pipe Line Company, September 30, 1941	13271	4345
General Summary	13272	4347
63. Investors' Appraisal of the Risk of Capital in the Natural Gas Industry as compared with other Divisions of the Utility Industry, Summary of Analyses, prepared by Paul B. Coffman, Vice-President of Standard and Poors Corporation	13321	4349
Table of Contents	13322	4349
Statement of Experience and Qualifications of Paul B. Coffman	13327	4354
Investors' Appraisal of Capital Risks in Various Divisions of the Utility Industry	13348	4371
Statement A, Investors' Appraisal of Risks of Capital for the years 1937, 1938, 1939 and 1940	13351	4373

Original Print

Statement A-1, Investors' Appraisal of Risks of Capital for the Interim-Period of 1941, January-August, Both Inclusive.....	13352	4375
Statement B, Investors' Appraisal of Risks of Capital for the years 1937, 1938, 1939 and 1940.....	13353	4377
Statement B-1, Investors' Appraisal of Risks of Capital for the Interim Period of 1941, January-August, Both Inclusive.....	13354	4379
Statement C, Investors' Appraisal of Risks of Capital for the years 1937, 1938, 1939 and 1940.....	13355	4381
Statement C-1, Investors' Appraisal of Risks of Capital for the Interim Period of 1941, January-August, Both Inclusive.....	13356	4383
Statement D, Investors' Appraisal of Risks of Capital for the years 1937, 1938, 1939 and 1940.....	13357	4385
Statement D-1, Investors' Appraisal of Risks of Capital for the Interim Period of 1941 January-August, Both Inclusive.....	13358	4387
Statement E, Investors' Appraisal of Risks of Capital for the years 1937, 1938, 1939 and 1940.....	13359	4389
Statement E-1, Investors' Appraisal of Risks of Capital for the Interim Period of 1941, January-August, Both Inclusive.....	13360	4391
Statement F, General Information Covering each Company as to the Nature and Size of the Business and the Territory served.....	13361	4393
64, Statistics supporting Data, Exhibit 63, Appendixes A, B, and C.....	13379	4414
Appendix A, Complete List of Companies studied and Reasons for eliminating those not used to determine Investors' Appraisal of Risks of Capital.....	13380	4414
Appendix B, Securities of forty-three Natural Gas Companies considered Representative of the industry, etc.....	13387	4426

Index, Volume X.

Appendix C, Working Papers showing the Computation of Investors' Appraisal of the Risks of Capital.....	13398	4446
Water Companies.....	13399	4447
Electric Operating Utility Companies.....	13420	4461
Manufactured and Mixed Gas Companies.....	13465	4501
Natural Gas Companies.....	13495	4521
65, Study relative to Rate of Return on Panhandle Eastern Pipe Line Company prepared by Paul B. Coffman, Vice President, Standard and Poors Corporation.....	13533	4547
Table of Contents.....	13534	4547
Chart No. 1, Main Transmission System of Panhandle Eastern Pipe Line Co. and Subsidiary.....	13542	4559
Chart No. 2, Growth of Natural Gas Industry in United States of America from 1906 to 1940.....	13548	4567
Chart No. 3, Consumption of Natural Gas in United States of America from 1919 to 1940.....	13556	4571
Chart No. 4, Revenue from Natural Gas Consumed in United States of America from 1919 to 1940.....	13552	4573

Chart No. 5, Average Revenue per M. C. F. from 1929 to 1940	13554	4575
Chart No. 6, Panhandle Sales by States, vs. Industry Consumption of Natural Gas from 1934 to 1940	13556	4577
Chart No. 7, Trends of Gross Revenue from 1934 to 1940, Panhandle vs. other Pipe Line Companies and Industry	13558	4579
Chart No. 8, Operating Ratio of Panhandle Compared with other Pipe Line Companies from 1934 to 1940	13560	4581
Chart No. 9, Trend of Revenue and Expenses of Panhandle Eastern Pipe Line Company from 1934 to 1940	13562	4583
Chart No. 10, Percent Earned on Invested Capital of Panhandle Based upon Capital Structure	13564	4585
Chart No. 11, Percent Earned on Invested Capital of Panhandle Based upon Net Property, Intangibles and Working Capital	13566	4587
Chart No. 12, Return to Common Stockholders of Panhandle Eastern Pipe Line Company from 1934 to 1940	13568	4589
Chart No. 13, New Tax Bill will reduce Income sharply Computations Based on Operations — Twelve Months ended June 30, 1941	13570	4591
Chart No. 14, Percent Earned on Invested Capital of Panhandle Eastern Pipe Line Company — as of June 30, 1941	13572	4593
Chart No. 15, Percent Earned on Invested Capital of Panhandle Eastern Pipe Line Company — as of June 30, 1941	13574	4595
Chart No. 16, Historical Costs of Debt Capital of Panhandle Eastern Pipe Line Company — from 1930 to 1941	13576	4599
Chart No. 17, Effect of 1941 Refinancing of Panhandle Eastern Pipe Line Company	13578	4603
Chart No. 18, Historical Costs of Preferred Stock Capital of Panhandle Eastern Pipe Line Company from 1937 to 1941	13580	4605
Chart No. 19, Earnings — Price Ratios of Natural Gas Pipe Line Common Stocks from 1937 to 1940	13582	4607
Chart No. 20, Current Earnings — Price Ratios of Natural Gas Pipe Line Common Stocks	13584	4609
Chart No. 21, Cost of Financing Northern Natural Gas Company Common Stock — Offered to Public on September 10, 1941	13586	4613
Chart No. 22, Estimated Current Cost of Financing Common Stock of Panhandle Eastern Pipe Line Company	13588	4615
Chart No. 23, Continuing Growth of Panhandle System Indicates Future Needs for New Capital	13590	4617
Chart No. 24, Panhandle Eastern Pipe Line Company Invested Capital as of June 30, 1941	13592	4621
Chart No. 25, Preferred Stock Unusual in Natural Gas Pipe Line Companies	13594	4623
Chart No. 26, Earnings Necessary to Maintain Credit Position of Panhandle Eastern Pipe Line Company	13596	4625
Chart No. 27, Earnings Necessary to Maintain Credit Position of Panhandle Eastern Pipe Line Company	13598	4627
Chart No. 28, Overall Cost of Capital to Panhandle Eastern Based on Ideal Capital Structure	13600	4629

Chart No. 29, Dollars needed Annually by Panhandle for Operations and Maintenance.....	13602	4633
Chart No. 30, Dollars needed Annually by Panhandle for Taxes.....	13604	4637
Chart No. 31, Dollars needed Annually by Panhandle to return Capital to Investors when Gas Reserves are Exhausted.....	13606	4639
Chart No. 32, Dollars needed Annually by Panhandle for current Capital Requirements — Bonds.....	13608	4641
Chart No. 33, Dollars needed Annually by Panhandle for current Capital Requirements — Preferred Stock.....	13610	4643
Chart No. 34, Dollars needed Annually by Panhandle for current Capital Requirements — Common Stock.....	13612	4645
Chart No. 35, Dollars needed Annually by Panhandle for total current Capital Requirements — Total Invested Capital.....	13614	4647
Chart No. 36, Dollars needed Annually by Panhandle to provide Service to Customers, a Fair Return to Investors and restore Invested Capital when Gas Reserves are Exhausted.....	13616	4649
Chart No. 37, Dollars needed Annually by Panhandle to Provide Service to Customers, a Fair Return to Investors and restore Invested Capital when Gas Reserves are Exhausted.....	13618	4651
Table for Chart No. 2, Growth of Natural Gas in the United States of America for the years 1906 to 1940, Inclusive.....	13619	4653
Table for Chart No. 3, Consumption of Natural Gas in the United States of America for the years 1919 to 1940, Inclusive.....	13620	4655
Table for Chart No. 4, Revenue from Natural Gas Consumed in the United States of America for the years 1919 to 1940, Inclusive.....	13621	4657
Table for Chart No. 5, Average Revenue per M. C. F. from Natural Gas Consumed in United States of America at Points of Consumption.....	13622	4659
Table for Chart No. 6, Natural Gas Sales by States for the years 1934 to 1940, Inclusive.....	13623	4661
Table for Chart No. 7, Trend of Gross Revenue, Panhandle Eastern Pipe Line Company vs. Other Pipe Line Companies and the Natural Gas Industry, 1934 to 1940 Both Inclusive.....	13624	4663
Table for Chart No. 8, Operating Ratio of Panhandle Eastern Pipe Line Company compared with other Pipe Line Companies exclusive of Taxes, 1934 to 1940.....	13625	4665
Table for Chart No. 9, Panhandle Eastern Pipe Line Company, Trend of Revenue and Expenses.....	13627	4669
Table for Chart No. 10, Percent Earned on Invested Capital, based upon Capital Structure.....	13628	4671
Table for Chart No. 11, Percent Earned on Invested Capital, based upon Net Property, Intangibles and Working Capital.....	13629	4673
Table for Chart No. 12, Return to Common Stockholders 1934 to 1940 Both Inclusive.....	13630	4675

Table for Chart No. 13, Consolidated Statement of Profit and Loss for the twelve months ended June 30, 1941	13631	4677
Table for Chart No. 14, Percent Earned on Invested Capital — twelve months ended June 30, 1941	13632	4679
Table for Chart No. 15, Percent Earned on Invested Capital in the twelve months ended June 30, 1941	13633	4681
Table for Chart No. 16, Computation of Weighted Average Cost Ratio of all Bond Issues 1930 — June 30, 1941	13634	4683
Table for Chart No. 17, Projection of Average Interest Cost, Debt Retirement and Amounts to be outstanding of Debt issued in the 1941 Refinancing	13639	4693
Table for Chart No. 18, Preferred Stock	13640	4695
Table for Chart No. 19, Earnings — Price Ratios on Natural Gas Pipe Line Common Stocks from 1937 to 1940	13641	4697
Table for Chart No. 20, Current Earnings — Price Ratios on Natural Gas Pipe Line Common Stocks	13642	4699
Table for Chart No. 21, Data regarding Public Offering of 355,250 Shares Northern Natural Gas Company Common Stock	13643	4701
Table for Chart No. 23, Statistics of Growth from 1936 to 1940	13644	4703
Table for Chart No. 25, Ratio of Preferred Stock to total Capitalization in Natural Gas Pipe Line Companies as of December 31, 1940	13645	4705
Table for Chart No. 26, Earnings Necessary to Maintain Credit Position based on Invested Capital as of June 30, 1941	13646	4707
Table for Chart No. 27, Earnings Necessary to Maintain Credit Position, etc.	13647	4709
Table for Charts Nos. 29 to 36, Inclusive, Dollars needed Annually to provide Service to Customers, a Fair Return to Investors and Return of Invested Capital when Reserves are Exhausted	13648	4711
Table for Chart No. 37, Dollars needed Annually to provide Service to Customers, a Fair Return to Investors and Return of Invested Capital when Reserves are Exhausted	13649	4713
69, Statement showing Amount of Depreciation on Book Cost of Property as of June 30, 1941	13709	4715
70, Reproduction Cost New of Plant, Property and Business as of June 30, 1941 (Determined from Valuation of September 30, 1938 by addition of Net Property Additions, plus Items of Working Capital, Value of Gas Purchase Contracts and Cost of Business Development from Valuation of June 30, 1941)	13711	4719
71, Valuation of Property, Plant and Equipment, September 30, 1938	13712	4719
Letter from P. McDonald Biddison, Consulting Engineer, to Panhandle Eastern Pipe Line Company; October 14, 1938	13713	4719

Statement relating to Appraisal of Property of Panhandle Eastern Pipe Line Company as of September 30, 1938	13719	4721
72. Statement of Net Addition to Gas Plant per Books from October 1, 1938 to June 30, 1941	14178	4723
74. Working Capital	14198	4724
Table I, Total Additional Necessary Materials and Supplies by Departments	14198	4724
Table II, Additional Necessary Materials and Supplies by Departments, Classified to show the Aggregate Supplies	14199	4724
Table III, Summary of Minimum Reasonable Amounts of Working Capital Currently Needed	14200	4725
Table IV, Total Cash, Prepayments, and Materials and Supplies Actually Maintained by the Company at Certain Dates in the Past	14201	4725
75. Natural Gas Supply, Value of Gas Reserves and Wells, February 1, 1937	14202	4726
Letter Ralph E. Davis, Inc., Engineers, to Panhandle Eastern Pipe Line Company and others, February 10, 1937	14203	4726
Table No. 2, Valuation of Producing and Proven Leases in Producing Area of Amarillo Field	14227	4744
Table No. 3, Valuation of Producing and Proven Leases in Producing Area of Hugoton Field	14228	4745
Table No. 8, Classification of Acreage Under Lease, February 1, 1937	14233	4745
76. Panhandle Eastern Pipe Line Company Natural Gas Supply	14243	4750
Letter, Ralph E. Davis, Inc., Engineers, to Board of Directors of Panhandle Eastern Pipe Line Company, November 12, 1940	14244	4746
Summary of Acreage in Amarillo and Hugoton Fields	14248	4731
77. Description of Physical Property of Michigan Gas Transmission Corporation	14251	4753
Testimony of George S. Young	14252	4753
Schedule 1, Compressor Stations	14272	4770
Schedule 2, List of Communities receiving Service from Public Utilities to whom Michigan Gas Transmission Corporation sells Gas Purchased from Panhandle Eastern Pipe Line Company, Population and Number of Customers as of June 30, 1941	14274	4771
Schedule 3, List of Industrial Consumers receiving Service on an Interruptible Basis indirectly from Michigan Gas Transmission Corporation System, June 30, 1941	14277	4779
Schedule 8, Michigan Gas Transmission Corporation Summary of Miles of Pipe by Sizes, June 30, 1941	14295	4781
79. Comparison of Daily provided Capacity to deliver Firm Gas with Maximum Daily Delivery of Firm Gas from System of Michigan Gas Transmission Corporation	14311	4783
79-A. Comparison of Daily provided Capacity to Deliver Firm Gas with Maximum Daily Delivery of Firm Gas and total delivery of Gas from the Pipe Lines owned or operated by Michigan Gas Transmission Corporation for the Winter Period of 1941-1942 to February 27, 1942	14312	4785

79-B, Total Delivery of Gas from Pipe Lines owned and operated by Michigan Gas Transmission Corporation on Days on which the Delivery of Firm Gas from System was the Maximum	14313	4787
80, Report of Inspection of Equipment in the Compressor Stations of the Michigan Gas Transmission Corporation by H. C. Lehn	14314	4789
81, Depreciation Study, Michigan Gas Transmission Corporation by H. S. Riddle	14321	4794
Letter, H. S. Riddle, Gas Engineering Department, to G. S. Young, Vice President, of Michigan Gas Transmission Corporation, November 10, 1941	14322	4794
Summary of Inspection Data	14323	4795
82, Accrued Depreciation on Compressor Station Structure, measuring and regulating Station Structures and Equipment and other Transmission Structures and general Equipment as of June 30, 1941 by Francis S. Haberly	14369	4796
83, Reproduction Cost new of Plant and Property of Michigan Gas Transmission Corporation as of June 30, 1941 by Francis S. Haberly	14375	4801
Letter Francis S. Haberly, Engineer, to G. S. Young, Vice President, Michigan Gas Transmission Corporation, October 27, 1941	14377	4801
Table of Contents	14378	4802
Statement of Francis S. Haberly	14379	4802
Summary	14389	4810
Reconciliation of Original Cost and of Reproduction Cost to reflect Changes due to Reclassification	14390	4811
Compressor Station Structures and Improvements	14391	4813
All Stations	14391	4813
Montezuma Compressor Station	14392	4813
Zionsville Compressor Station	14398	4818
Edgerton Compressor Station	14402	4821
Other Transmission System Structures and Improvements	14405	4824
All Locations	14405	4824
Montezuma Compressor Station	14406	4824
Zionsville Compressor Station	14407	4825
Edgerton Compressor Station	14408	4826
Mains	14409	4826
Compressor Station Equipment	14416	4831
All Stations	14416	4831
Montezuma Compressor Station	14417	4831
Zionsville Compressor Station	14427	4839
Edgerton Compressor Station	14433	4844
Measuring and Regulating Station Equipment	14437	4847
General Equipment	14438	4848
Office Furniture and Fixtures	14439	4848
Transportation Equipment	14440	4849
Stores Equipment	14441	4849
Tools and Work Equipment	14442	4849
84, Reproduction Cost new less Depreciation of Michigan Gas Transmission Corporation as of June 30, 1941 by Francis S. Haberly	14443	4850

		Original Print
Summary	14444	4850
Compressor Station Structures and Improvements	14445	4851
Measuring and Regulating Station Structures	14446	4852
Other Transmission System Structures	14447	4852

Index, Volume XI.

Mains	14448	4853
Compressor Station Equipment	14449	4853
Measuring and Regulating Station Equipment	14450	4854
General Equipment	14451	4855
87, Materials and Supplies Restatement of Cost of Major Items as of June 30, 1941, Michigan Gas Transmission Corporation by Francis S. Haberly	14466	4856
Materials and Supplies	14467	4856
88, Michigan Gas Transmission Corporation — Comparative Balance Sheets, per Books as at December 31, 1936 to 1940, inclusive, and June 30, 1941	14475	4863
89, Michigan Gas Transmission Corporation Statement showing earned Surplus per Books for the Ten Months ended December 31, 1936, years 1937 to 1940, inclusive, year and six months ended June 30, 1941	14477	4867
90, Michigan Gas Transmission Corporation — Statement showing Capital Surplus, per books, for the Ten Months ended December 31, 1936, years 1937 to 1940, inclusive, year and six months ended June 30, 1941	14478	4869
91, Michigan Gas Transmission Corporation — Preliminary Report on Original Cost Studies by Central Service Corporation	14479	4871
Statement A, Outline of Origin and Development	14489	4878
Statement A-1, Common Stock issued and Outstanding at January 1, 1940 and June 30, 1941	14492	4881
Statement B, Statement showing Acquisition by Reporting Company or Predecessors of Gas Operating Unit or System, etc.	14493	4883
Statement D, Statement relating to Gas Plant as of January 1, 1940, etc.	14494	4885
Statement E, Statement showing Summary of Adjustment relating to Gas Plant, etc.	14495	4886
Statement F, Statement relating to Gas Plant as of January 1, 1940, etc.	14496	4887
Statement G, Statement relating to Balance Sheet as of January 1, 1940, etc.	14498	4891
Statement H, Statement relating to Suggested Plan for Depreciation, etc.	14499	4893
Statement I, Statistical Information Relative to Gas Plant at June 30, 1941	14500	4893
92, Michigan Gas Transmission Corporation Statement showing Original Cost Depreciated to present Conditions as at June 30, 1941 and observed Depreciation as at June 30, 1941	14507	4903

93, Michigan Gas Transmission Corporation — Statement of Contributions made to Customers for Business Development for the years 1936, 1937 and five months ended May 31, 1938	14508	4905
94, Michigan Gas Transmission Corporation Statement showing working Capital as of June 30, 1941	14510	4908
95, Michigan Gas Transmission Corporation — Estimated Cost of Completing work in Progress at June 30, 1941 and Estimated Gross Income to be derived from the Completed Projects	14517	4919
97, Michigan Gas Transmission Corporation — Variation in Purchase Power of Dollar as Related to Gas Plant Graph relating to Variation in Purchasing Power of the Dollar spent for Main Compressor Units	14519	4921
Graph relating to Variation in Purchasing Power of the Dollar spent for Steel Pipe	14522	4923
Graph relating to Variation in Purchasing Power of the Dollar spent for Station Structure Materials	14523	4925
Graph relating to Variation in Purchasing Power of the Dollar spent for Station Structure Labor	14524	4927
Graph relating to Variation in Purchasing Power of the Dollar spent for Station Equipment Labor	14525	4929
Graph relating to Variation in Purchasing Power of the Dollar spent for Mains Installations	14526	4931
Statement relating to Variation in Purchasing Power of the Dollar as related to "Gas Plant"	14527	4933
99, Michigan Gas Transmission Corporation — Statement of Income and Expense per books for years ended December 31, 1936 to 1940, inclusive, twelve Months ended June 30, 1941 and six Months ended June 30, 1941 and December 31, 1940	14528	4935
100, Michigan Gas Transmission Corporation — Statement of Income and Expense per books and after Adjustments and redistributions necessary to reflect the 26 months Period per books on an annual basis, for six months ended December 31, 1940 and June 30, 1941 and for twelve months ended June 30, 1941	14530	4937
101, Michigan Gas Transmission Corporation — Comparative Statement of Operating Revenues, for years ended December 31, 1936 to 1940, inclusive, twelve months ended June 30, 1941 and six months ended June 30, 1941 and December 31, 1940	14533	4943
102, Michigan Gas Transmission Corporation — Operation and Maintenance Expense per books for the twelve months ended June 30, 1941	14537	4951
103, Michigan Gas Transmission Corporation — Statement showing Gas Sales, Gas Transported, Gas used by Company, Line Losses and Gas Purchased for the years ended December 31, 1936 to 1940, inclusive, twelve months ended June 30, 1941 and December 31, 1940	14538	4953
106, Registration Statement of Panhandle Eastern Pipe Line Company No. 2-4597, filed with the Securities & Exchange Commission November 18, 1940, Excerpts from	14540	4957
	14548	4959

	Original	Print-
Cover and Pages 1 to 4	14548	4959
Pages 45 and 46	14593	4969
Pages 60 and 61	14608	4973
Page 8-1, Auditor's Certificate	14626	4977
Pages 8-3 to 8-7, Balance Sheet as of December 31, 1940	14628	4979
Pages 8-17 to 8-24, Intangible Assets, etc.	14642	4980
107, Report A-11488 of the Committee on Stock List, New York Stock Exchange, application for Listing of the first Mortgage and First Lien 3% Bonds, Series B due November 1, 1960 of Panhandle Eastern Pipe Line Company	14651	5005
Page 1	14651	5005
108, Letter of P. McDonald Biddison re Provision for Retirements, Depletion and Amortization for year 1938	14732	5006
109, Letter of P. McDonald Biddison re Provision for Retirements, Depletion and Amortization for year 1939	14733	5007
110, Letter of P. McDonald Biddison re Provision for Retirements, Depletion and Amortization for year 1940	14734	5008
111, Letter of P. McDonald Biddison re Provision for Retirements, Depletion and Amortization for year 1941	14735	5009
112, Table of Subsidiary Companies of Panhandle Eastern Pipe Line Company	14736	5010
131, Future Division of Production between Fields Considering a reasonable expected Load Increase	14768	5015
132, Future Division of Production between Fields without Consideration for increased Loads	14769	5017
137, Acres used in Determining Weighted Average Pressures of Texas Panhandle Field	14783	5018
138, Dry Gas Production and Pressure Decline — Texas Panhandle Field	14784	5019
139, Estimated Intake Pressures at Sneed Compressor Station	14785	5020
140, Estimated Average Working Pressures at Well head for "Group Areas" shown on Exhibit 46	14786	5021
141, Annual and Cumulative Production from Panhandle Field, Texas	14787	5023
142, Summary of Cost of Gas Produced and Purchased — basic Load for the years 1940-46, inclusive	14789	5026
Schedule 1, Summary of Cost of Gas Produced and Purchased per M. C. F. by Fields — Basic Load for the years 1940 to 1946 inclusive	14790	5027
Schedule 2, Cost of Gas Purchased per M. C. F. By Fields — Basic Load for the years 1940 to 1946 inclusive	14791	5027
Schedule 3, Production Costs per M. C. F. Produced by Fields — Basic Load for the years 1940 to 1946 inclusive	14792	5031
Schedule 4, Transportation Costs per M. C. F. Produced by Fields — Basic Load for the years 1940 to 1946 inclusive	14793	5033
Schedule 5, Summary of Production and Transportation Costs per M. C. F. Produced by Fields — Basic Load for the years 1940 to 1946 inclusive	14794	5035

Original Print

143, Summary of Cost of Gas Produced and Purchased — Estimated Future Load for the years 1940 to 1946, inclusive.....	14795	5036
Schedule 1, Summary of Cost of Gas Produced per M. C. F. by Fields — Estimated future Load for the years 1940 to 1946 inclusive.....	14796	5037
Schedule 2, Cost of Gas Purchased per M. C. F. by Fields — Estimated Future Load for the years 1940 to 1946 inclusive.....	14797	5039
Schedule 3, Production Costs per M. C. F. Produced by Fields — Estimated Future Load for the years 1940 to 1946 inclusive.....	14798	5041
Schedule 4, Transportation Costs per M. C. F. Produced by Fields — Estimated Future Load for the years 1940 to 1946 inclusive.....	14799	5043
Schedule 5, Summary of Production and Transportation Costs per M. C. F. Produced by Fields — Estimated Future Load for the years 1940 to 1946 inclusive.....	14800	5045
145, Panhandle Eastern Pipe Line Company — Compiled Registration Statement No. 2-4919 filed with the Securities & Exchange Commission December 21, 1941, Excerpts from.....	14824	5047
Cover and following Page.....	14824	5047
Pages 2 to 5.....	14827	5051
Pages 9 to 20.....	14834	5059
Page S-1, Auditor's Certificate.....	14924	5083
Pages S-3 to S-9, Balance Sheet as of September-30, 1941.....	14926	5085
Pages S-18 to S-21, Reserves for Depreciation, etc.....	14941	5099
147, Holding Company Act Release No. 3286, January 23, 1942 — Findings and Opinion of the Securities & Exchange Commission in the Matter of Columbia Gas and Electric Corporation, et al.....	15091	5107
Order.....	15114	5140
149, Statement showing Investment by Owners and Long Term Creditors at June 30, 1941, Panhandle Eastern Pipe Line Company.....	15117	5143
150, Financial Data of Common Stock Issues of Electric and Gas Utilities, Years 1935 to 1940, inclusive.....	15118	5145
151, Earnings — Price Ratios of Common Stocks in Various Divisions of the Utility Industry.....	15122	5153
152, Estimate of Federal Income and Excess Profits Taxes, applying Rates levied in the Revenue Act of 1941 to Net Income for the Year ended June 30, 1941, Panhandle Eastern Pipe Line Company.....	15131	5171
153, Statement of Cost of Business Development Period from April 1, 1932 to June 30, 1941, Panhandle Eastern Pipe Line Company.....	15135	5177
157-A, Agreement between Panhandle Eastern Pipe Line Company and Columbia Gas and Electric Corporation and Columbia Oil and Gasoline Corporation dated January 31, 1936 (Exhibit H-6).....	15227	5183
157-B, Agreement between Columbia Oil and Gasoline Corporation and Columbia Gas and Electric Corporation and		

Original Print

Panhandle Eastern Pipe Line Company and Henry T. Bush and C. Ray Phillips, receivers of Missouri-Kansas Pipe Line Company, dated as of June 1, 1936 (Exhibit H-9)	15237	5183
Exhibit A, General Release	15251	5200
Exhibit B, General Release to Receivers	15254	5202
Exhibit C, Release of Claim	15256	5203
157-C, Bound Volume containing Offer dated January 31, 1936 of Columbia Gas & Electric Corporation and Coldfirth Oil and Gasoline Corporation to the Receivers of Missouri-Kansas Pipe Line Company, Extension dated March 5, 1936, Modification dated April 22, 1936 and Acceptance dated April 29, 1936 (Exhibit I-2)	15258	5205
Letters	15260	5220
158, Statement showing Gas Revenue from Indiana Gas Transmission Corporation and Michigan Gas Transmission Corporation from November 1931 to November 1941, inclusive, Panhandle Eastern Pipe Line Company	15280	5233
160, Purchase Agreement dated February 2, 1942 between Panhandle Eastern Pipe Line Company and Gloré, Forgan & Company and Kidder, Peabody & Company	15285	5241

Index, Volume XII.

161, Estimated Main Line Sales and Revenues, years 1941-1946, inclusive, Panhandle Eastern Pipe Line Company	15300	5271
162, Ten Years' Estimate (1941-1951) of Sales to Detroit and other Areas and Types of Sale	15301	5273
163, Financial Statement of Michigan Gas Transmission Corporation for Period ended December 31, 1941	15312	5295
Balance Sheet as of December 31, 1941	15313	5297
Assets	15314	5299
Liabilities	15315	5301
Income Statement	15317	5305
Gas	15318	5307
Non-Utility	15320	5311
Other Income	15321	5313
Other Deductions	15322	5315
Surplus	15323	5317
Gas Expenses	15335	5341
Statistical Report	15339	5349
Fixed Capital Expenditure, Report	15343	5357
164, Supplementary Statement of Financial Statement, Exhibit 163	15353	5377
165, Operating Budget of Michigan Gas Transmission Corporation for the year 1942, Excerpt from	15355	5381
Cover	15355	5381
Pages 3 to 53	15357	5383
Income Statement	15357	5383
Gas	15358	5385
Other Deductions	15359	5387
166, Statements showing Gas Purchase and Sales Transactions between Panhandle Eastern Pipe Line Company and Subsidiaries	15373	5413

167, Statement showing Checks of Michigan Consolidated Gas Company in favor of Michigan Gas Transmission Corporation drawn on National Bank of Detroit	15374	5415
169, Statement showing Percentage Increase or Decrease of Sales of Natural Gas of Michigan Gas Transmission Corporation for year 1937 to 1941, inclusive, to other affiliates	15376	5417
170, Certificate setting forth the Designation and certain of the Terms of the 5.60% cumulative Preferred Stock of Panhandle Eastern Pipe Line Company filed February 3, 1942, in Delaware	15378	5421
171, Certificate of Purchase and Retirement of Class A Preferred Stock of Panhandle Eastern Pipe Line Company filed February 14, 1942 in Delaware	15393	5434
172, Balance Sheets per Books Panhandle Eastern Pipe Line Company and Subsidiary Companies, as at each December 31, 1930 through 1941	15397	5437
173, Income Statement per Books, Period from April 1, 1932 to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15400	5443
174, Earned Surplus per Books, Period from Commencement of Operations to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15402	5447
175, Capital Surplus per Books, Period from September 1, 1930 to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15404	5451
176, Gas Plant — Panhandle Eastern Pipe Line Company and Subsidiary Companies as at each December 31, 1930 through 1941	15405	5453
177, Statement of Gas Produced, Period from April 1, 1932 to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15407	5456
178, Statement of Gas Purchased from Period April 1, 1932 to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15408	5457
179, Statement of Gas Revenue, Period from April 1, 1932 to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15409	5459
180, Statement of Gas Revenue by States, Period from April 1, 1932 to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15410	5461
181, Net Additions to Gas Plant per Books October 1, 1938 to December 31, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15411	5462
182, Comparative Statement of Depreciation, Depletion and Amortization of Unoperated leases authorized by Board of Directors and the amounts booked for the years 1937, 1938, 1940 and 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15412	5463
183, Statement showing Amount of Depreciation claimed in Federal Income Tax Returns and Settlement Basis for the nine months ended December 31, 1932 and the years 1933 to 1940, inclusive, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15413	5463

184, Comparative Statement of State, Local and Miscellaneous Federal Taxes Paid with the Amounts Accrued years 1936 to 1940, inclusive	15414	5464
185, Statement of Taxes Paid for the years 1936 through 1940, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15415	5465
186, Reconciliation Federal Income and Federal Excess Profits Taxes Paid with Amounts accrued years 1936 through 1940, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15416	5467
187, Panhandle Eastern Pipe Line Company and Subsidiary Companies' Statements and Copies of Contracts with Missouri Power and Light Company, Illinois Iowa Power Company, Caterpillar Tractor Company, Keystone Steel & Wire Company, R. Herschel Manufacturing Company and Peoria Malleable Castings Company, Excerpts from Page 1, Statement concerning Contract with Missouri Power and Light Company	15417	5469
Page 2, Statement concerning Contract with Illinois Iowa Power Company	15417	5469
Page 3, Statement concerning Contract with Caterpillar Tractor Company	15430	5469
Page 4, Statement concerning Contract with Keystone Steel and Wire Company	15442	5470
Page 5, Statement concerning Contract with R. Herschel Manufacturing Company	15445	5471
Page 6, Statement concerning Contract with Peoria Malleable Castings Company	15449	5472
188, Panhandle Eastern Pipe Line Company Annual Report for the year 1940, Excerpts from Pages 3 to 6, Annual Report for 1940	15452	5472
189, Panhandle Eastern Pipe Line Company Annual Report for the year 1941, Excerpts from Pages 3 to 8, Annual Report for 1941	15458	5473
190, Comparative Statement of Operating and Maintenance Expenses year ended December 31, 1940 and 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15458	5473
191, Reconciliation of Net Income per books with Net Income per Federal Income Tax Return for the year 1939, Panhandle Eastern Pipe Line Company	15472	5476
192, Reconciliation of Net Income per books with Net Income per Federal Income Tax Return for the year 1940, Panhandle Eastern Pipe Line Company	15472	5476
193, Analysis of Reserve for Depreciation of Gas Plant, years ended December 31, 1932 through 1940 and six Months ended June 30, 1941, Panhandle Eastern Pipe Line Company and Subsidiary Companies	15486	5483
194, Panhandle Eastern Pipe Line Company and Subsidiary Companies pro-forma Consolidated Balance Sheet as of December 31, 1941 giving effect to financing Transactions consummated on February 6, 1942 and Acquisition on that Date of Capital Stock and Debt of Michigan Gas	15490	5489
	15491	5491
	15492	5493

Transmission Corporation, and Indiana Gas Distribution Corporation, and Purchase of Certain Property of Ohio Fuel Gas Company	15494	5499
195, Panhandle Eastern Pipe Line Company and Subsidiary Companies pro forma Consolidated Income Account (Note A) for the year ended December 31, 1941	15499	5505
196, Panhandle Eastern Pipe Line Company and Subsidiary Companies pro forma Consolidated Income Account (Note A) for the year ended December 31, 1941 as adjusted to give the effect to Federal Income and Federal Excess Profits Tax Rates proposed in Recommendation of Secretary of Treasury Morgenthau on March 3, 1942 before House, Ways and Means Committee	15502	5509
197, Panhandle Eastern Pipe Line Company and Subsidiary Companies Balance Sheet per books February 28, 1942	15506	5513
198, Panhandle Eastern Pipe Line Company and Subsidiary Companies pro forma Consolidated Income Account (Note A) for the twelve months ended February 28, 1942	15510	5519
199, Panhandle Eastern Pipe Line Company and Subsidiary Companies pro forma Consolidated Income Account (Note A) for the twelve Months ended February 28, 1942 as adjusted to give effect to Federal Income and Federal Excess Profits Tax Rates proposed in Recommendation of Secretary of Treasury Morgenthau on March 3, 1942 before House, Ways and Means Committee	15513	5523
200, Panhandle Eastern Pipe Line Company and Subsidiary Companies (including Michigan Gas Transmission Corporation and Indiana Gas Distribution Corporation) Comparative Statement of Gas Plant as of December 31, 1939, December 31, 1940, June 30, 1941, December 31, 1941 and February 28, 1942	15517	5527
201, Michigan Gas Transmission Corporation Gas Plant, as at each December 31, 1931 through 1941	15519	5531
202, Panhandle Eastern Pipe Line Company and Subsidiary Companies, including Michigan Gas Transmission Corporation and Indiana Gas Distribution Corporation, Statement of Estimated Federal Income and Excess Profits Taxes for the year 1941 (based on the Revenue Act of 1941)	15520	5533
203, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement of Operation and Maintenance Expense year 1941 (restated to include Michigan Gas Transmission Corporation and Indiana Gas Distribution Corporation for entire year)	15525	5541
204, Panhandle Eastern Pipe Line Company and Subsidiary Companies 1942 Construction and Retirement Budgets Summary by Companies	15529	5545
205, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement of Certain Estimated Construction Expenditures for the year 1942	15537	5556
208, Financial Statement of Panhandle Eastern Pipe Line Company and Subsidiary Companies for the period ended December 31, 1941	15783	5556

Financial Statement of Panhandle Eastern Pipe Line Company and Subsidiary Companies.....	15783	5556
Financial Statement of Illinois Natural Gas Company....	15822	5600

Index, Volume XIII.

Financial Statement of Panhandle Eastern Pipe Line Company.....	15838	5630
Statistical Report of Panhandle Eastern Pipe Line Company and Subsidiary Companies.....	15868	5688
209, Letter of Panhandle Eastern Pipe Line Company to Detroit City Gas Company dated March 30, 1936 designating the Office to which the latter Company should make Payment for Gas delivered pursuant to Contract of August 31, 1935.....	15899	5748
210, Index Numbers of Wholesale Prices of Commodities by Groups (1926=100).....	15902	5750
211, U. S. Department of Labor, Bureau of Labor Statistics Release of March 26, 1942 Wholesale Prices for the Week ended March 21, 1942.....	15902	5751
212, U. S. Department of Labor, Bureau of Labor Statistics, "Index Numbers of Wholesale Prices of All Commodities by Months, from 1890 to 1940 (1926=100)".....	15904	5755
213, Table showing Average Hourly Earnings and Average Hours per Week per Wage Earner in twenty-five Manufacturing Industries from 1914 to 1942.....	15905	5757
214, Graph showing Average Hourly Earnings and Average actual Hours per Week per Worker in twenty-five Manufacturing Industries from 1914 to 1942.....	15912	5765
215, Table showing "Employment, Payrolls and Average Weekly Earnings in Representative New York State Factories, from 1914 to 1941 employment (Index Numbers with Average from 1925 to 1927 as 100)".....	15913	5767
216, Indexes of Wholesale Prices and Cost of Living for certain months from 1913 to 1942 (1935-1939 = 100).....	15914	5769
217, Graph showing Indexes of Wholesale Prices and Cost of Living from 1913 to 1941.....	15916	5771
218, Testimony of Mr. Joe D. Creveling before the Securities and Exchange Commission on November 29, 1941, in the Matter of Columbia Gas & Electric Corporation, et al., File No. 59-33, etc.....	15917	5773
219, Panhandle Eastern Pipe Line Company Gas Sales and Purchase Contracts, Copy of Report by Bureau of Internal Revenue and Related Correspondence.....	15931	5783
Exhibit A, Statement relating to Comparison of Values of Assets transferred to Panhandle Eastern Pipe Line Company by Missouri-Kansas Pipe Line Company, etc.....	15937	5789
Exhibit B, Schedule showing Sales of Various Units of Pipe Line Construction sold by Shippey, Maddin and Parish Gas Company, etc.....	15938	5790
Letter of Leith V. Watkins, Secretary-Controller, of Panhandle Eastern Pipe Line Company to N. F. Paxton, Assistant Secretary, Panhandle Eastern Pipe Line Company, November 7, 1941.....	15940	5792

Original Print

Waiver of Restriction on Assessment and Collection of Deficiency in Tax and Acceptance of Overassessment.	15942	5794
Letter of J. P. Wenchel, Chief Counsel, of Treasury Department to Panhandle Eastern Pipe Line Company, April 11, 1940.	15944	5795
Letter of Leith V. Watkins, Secretary-Controller, of Panhandle Eastern Pipe Line Company to J. P. Wenchel, Chief Counsel, for Treasury Department, August 21, 1940.	15947	5798
Letter of J. P. Wenchel, Chief Counsel, of Treasury Department to Panhandle Eastern Pipe Line Company, October 3, 1940.	15954	5811
Letter of Leith V. Watkins, Secretary-Controller, of Panhandle Eastern Pipe Line Company to J. P. Wenchel, Chief Counsel, for Treasury Department, February 24, 1941.	15956	5812
220, Panhandle Eastern Pipe Line Company Excerpts from Minutes of Meetings of Board of Directors relating to provisions for Depreciation, Depletion, and Amortization	15962	5818
Minutes of February 24, 1942	15963	5818
Minutes of January 25, 1941	15964	5818
Minutes of December 14, 1939	15965	5819
Minutes of December 22, 1937	15966	5820
Minutes of February 13, 1936	15967	5820
Minutes of February 15, 1933	15970	5821
Minutes of May 5, 1932	15972	5830
221, Panhandle Eastern Pipe Line Company and Subsidiary Companies Computation of working Capital Requirement	15975	5832
222, Panhandle Eastern Pipe Line Company and Subsidiary Companies Computation of Average return Earned on Net Investment for the period April 1, 1932 to December 31, 1941	15980	5835
222-A, Panhandle Eastern Pipe Line Company and Subsidiary Companies Comparison of Average Return Earned on Net Investment for the periods April 1, 1932 to December 31, 1936, and January 1, 1937 to December 31, 1941	15982	5838
223, Panhandle Eastern Pipe Line Company and Subsidiary Companies substitute Estimate (less economic) of Additional Capital Expenditures South and West of Liberal Compressor Station required to meet Peak-day Sales of 307,000 M. C. F., 1942.	15983	5839
224, Panhandle Eastern Pipe Line Company and Subsidiary Companies substitute Estimate (less economic) of Additional Capital Expenditures South and West of Liberal Compressor Station required to meet Peak-day Sales of 338,000, M. C. F., 1942.	15984	5840
225, Panhandle Eastern Pipe Line Company and Subsidiary Companies Estimate of Operation and Maintenance Costs South and West of Liberal Compressor Station, 307,000 M. C. F. Continuous Daily Sales Capacity Operation at 70% Capacity Factor	15985	5841
226, Panhandle Eastern Pipe Line Company and Subsidiary Companies Estimate of Operation and Maintenance Costs		

South and West of Liberal Compressor Stations, 307,000 M. C. F. Continuous Daily Sales Capacity Operation at 90% Capacity Factor	15987	5845
227, Panhandle Eastern Pipe Line Company and Subsidiary Companies Estimate of Operation and Maintenance Costs South and West of Liberal Compressor Station, 338,000 M. C. F. Continuous Daily Sales Capacity Operation at 70% Capacity Factor	15989	5849
228, Panhandle Eastern Pipe Line Company and Subsidiary Companies Estimate of Operation and Maintenance Costs South and West of Liberal Compressor Station, 338,000 M. C. F. Continuous Daily Sales Capacity Operation at 90% Capacity Factor	15991	5853
229, Capacity Study April 7, 1942 Continuous Daily Delivery Capacity - 307,000 M. C. F.	15993	5857
230, Capacity Study April 7, 1942 completely looped and economically powered Main Line System with Economic Production-Transmission Expenditures	15998	5862
231, Capacity Study April 7, 1942 revised completely looped and economically powered Main Line System with less Economic Production-Transmission Expenditures	16003	5867
232, Michigan Gas Transmission Corporation Computation of Average Return Earned on Net Investment for the period March 1, 1936 to December 31, 1941	16008	5873
233, Prospectus Panhandle Eastern Pipe Line Company \$10,000,000 First Mortgage and First Lien 3% Bonds, Series C, due January 1, 1962, and 150,000 shares 5.60% Cumulative Preferred Stock, Excerpts from	16009	5875
Page 1	16009	5875
Pages 3 to 8, Application of Proceeds, etc.	16011	5877
Pages 11 to 13, Certain Proposed Acquisitions, etc.	16019	5889
Page 16, Letter to Board of Directors, November 13, 1941	16024	5895
Page 66, Notes to Balance Sheets	16075	5897
Page 69, Notes to Income Account	16078	5899
234, Summary of Construction and Retirement Budget and Work Order Procedure	16095	5901
235, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement showing the Computation of Depreciation for Federal Income Tax Purposes for the year 1939 as claimed in Federal Income Returns	16097	5903
236, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement showing the Computation of Depreciation for Federal Income Tax Purposes for the year 1939 on the basis as settled with the Bureau of Internal Revenue	16098	5905
237, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement showing the Computation of Depreciation for Federal Income Tax Purposes for the year 1940 as claimed in Federal Income Tax Return	16099	5907
238, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement showing the Computation of Depreciation for Federal Income Tax purposes for the year 1940 on the basis as settled with the Bureau of Internal Revenue	16100	5909

243, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement of Estimated Federal Income and Excess Profits Taxes for the 12 months ended February 28, 1942 (based on Revenue Act of 1941)	16105	5911
244, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement of Budget Items included in Exhibit No. 205	16108	5917
245, Agreement between Columbia Gas & Electric Corporation and Panhandle Eastern Pipe Line Company dated February 5, 1942	16110	5921
246, Panhandle Eastern Pipe Line Company and Subsidiary Companies preliminary Determination of the second Installment of Purchase Price to be paid to Columbia Gas & Electric Corporation, computed in accordance with Provisions (Paragraph C) of the Agreement between Columbia Gas and Electric Corporation and Panhandle Eastern Pipe Line Company dated February 5, 1942	16123	5932
247, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement showing Certain Increased Costs not fully Present in Income Account (Exhibit 195 and 196) for the year 1941	16124	5933
248, Panhandle Eastern Pipe Line Company and Subsidiary Companies pro forma Consolidated Income Account for the year ended December 31, 1941	16125	5935
249, Panhandle Eastern Pipe Line Company and Subsidiary Companies pro forma Consolidated Income Account for the year ended December 31, 1941 (Note A) as adjusted to give effect to Federal Income and Federal Excess Profits Tax Rates proposed in Recommendation of Secretary of Treasury Morgenthau on March 3, 1942 before House Ways and Means Committee	16128	5939
250, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement of Rate Case Expenses in Connection with Federal Power Commission Consolidated Dockets G-200 and G-207 including actual cost to February 28, 1942 and Estimated Cost to complete	16131	5942
250 A, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement of Rate Case Expenses in Connection with Federal Power Commission Consolidated Dockets G-200 and G-207 including actual Cost to February 28, 1942 and Estimated Cost to complete	16131A	5943
251, Panhandle Eastern Pipe Line Company and Subsidiary Companies Statement showing pro forma Consolidated Net Operating Revenue as adjusted for a full Year's Cost (Note A) as allocated between regulated and nonregulated Sales for the year ended December 31, 1941	16132	5947
252, Panhandle Eastern Pipe Line Company and Subsidiary Companies Additional Information requested in re Exhibit No. 17	16138	5956
253, Study relative to Minimum Return Requirements of Panhandle Eastern Pipe Line Company (giving Effect to Property Acquisitions) prepared by Paul B. Coffman	16145	5961
Chart No. 4, Condensed Actual and pro forma Balance Sheets of Panhandle Eastern Pipe Line Company as of December 31, 1941	16149	5967

Index Volume XIV.

Original Print

Chart No. 2, Trend of Revenue and Expenses of Panhandle Eastern Pipe Line Company from 1932 to 1941 and pro forma	16150	5069
Chart No. 3, Percent Earned on Invested Capital of Panhandle based upon Net Gas Plant and Working Capital from 1932 to 1941	16151	5071
Chart No. 4, Percent Earned on Invested Capital of Panhandle based upon Capital Structure from 1932 to 1941	16152	5073
Chart No. 5, Return to Common Stockholders of Panhandle Eastern Pipe Line Company from 1932 to 1941	16153	5075
Chart No. 6, Percent Earned on Invested Capital of Panhandle pro forma for 12 Months ended February 28, 1942	16154	5077
Chart No. 7, Percent Earned on Invested Capital of Panhandle pro forma for 12 Months ended February 28, 1942	16155	5079
Chart No. 8, Working Capital of Panhandle Eastern Pipe Line Company is being Reinvested in Fixed Assets	16156	5081
Chart No. 9, Effect of Sinking Fund and Maturity Provisions of Debt and Preferred Stock of Panhandle Eastern Pipe Line Company	16157	5083
Chart No. 10, Investors' Appraisal of Overall Capital Risks in Various Divisions of the Utility Industry from 1937 to 1941	16158	5085
Chart No. 11, Investors' Appraisal of Overall Capital Risks 133 Stable Industrial Companies	16159	5087
Chart No. 12, Panhandle Eastern Pipe Line Company, invested Capital as of February 28, 1942	16160	5089
Chart No. 13, Cost of Financing Panhandle Eastern Pipe Line Company First Lien and First Mortgage Series "C" S. F. 3's due January 1, 1962	16161	5091
Chart No. 14, Historical Costs of Debt Capital of Panhandle Eastern Pipe Line Company from 1930 to 1942	16162	5093
Chart No. 15, Cost of Financing Panhandle Eastern Pipe Line Company 5.60% Preferred Stock	16163	5095
Chart No. 16, Historical Costs of Preferred Stock Capital of Panhandle Eastern Pipe Line Company from 1936 to 1942	16164	5097
Chart No. 17, Record of Sales of Panhandle Eastern Pipe Line Company 5.60% Preferred Stock to Public from February 4 to March 30, 1942	16165	5099
Chart No. 18, Price to Public of Panhandle Eastern Pipe Line Company 5.60% Preferred Stock reduced on April 2, 1942	16166	6001
Chart No. 19, Record of Sales of Panhandle Eastern Pipe Line Company 5.60% Preferred Stock to Public from April 2 to April 10, 1942	16167	6003
Chart No. 20, Assumed Cost of Financing Panhandle Eastern Pipe Line Company 5.60% Preferred Stock	16168	6005
Chart No. 21, Earnings — Price Ratios of Natural Gas Pipe Line Company Common Stocks from 1937 to 1941	16169	6007
Chart No. 22, Average Earnings — Price Ratios of Natural Gas Pipe Line Company Common Stocks from 1937 to 1941	16170	6009

Chart No. 23, Accepted Earnings — Price Ratio for Panhandle Eastern Pipe Line Co. Common Stock	16171	6011
Chart No. 24, Minimum Earnings required for Common Stock of Panhandle Eastern Pipe Line Company	16172	6013
Chart No. 25, Minimum Earnings required to Maintain Credit Position of Panhandle Eastern Pipe Line Company	16173	6015
Chart No. 26, Minimum Earnings required to Maintain Credit Position of Panhandle Eastern Pipe Line Company	16174	6017
Chart No. 27, Prime Money Rates Monthly from 1930 to March, 1942	16175	6019
Chart No. 28, Commercial Loan Rates Charged Customers by Banks in Principal Cities — Monthly, from 1930 to 1942	16176	6021
Chart No. 29, Yields on U. S. Government and High Grade Municipal Bonds Monthly, from 1930 to March, 1942	16177	6023
Chart No. 30, Standard's Highest Grade (A1+) Corporate Bond Yields Monthly, from 1930 to March, 1942	16178	6025
Chart No. 31, Standard's Corporate Bond Yields — by Quality Rating Monthly, from 1937 to March, 1942	16179	6027
Chart No. 32, Standard's Public Utility Bond Yields — by Quality Rating Monthly, from 1937 to March, 1942	16180	6029
Chart No. 33, Bonds, Debentures and Notes issued by Natural Gas Companies from 1936 to 1941	16181	6031
Chart No. 34, Bonds and Debentures of Natural Gas Companies sold from January 1, 1936 to December 31, 1941	16182	6033
Chart No. 35, Yields on New Security Issues of Natural Gas Companies according to Quality Rating, from 1936 to 1941	16183	6035
Chart No. 36, Ideal Earnings Coverage Ratios for High Grade (A Group) Natural Gas Company Bonds	16184	6037
Chart No. 37, Debt Coverage Ratios for El Paso Natural Gas Company Actual and Adjusted to a 6-1/2% Rate of Return	16185	6039
Chart No. 38, Debt Coverage Ratios for Northern Natural Gas Company Actual and Adjusted to a 6-1/2% Rate of Return	16186	6041
Chart No. 39, Debt Coverage Ratios for Southern Natural Gas Company Actual and Adjusted to a 6-1/2% Rate of Return	16187	6043
Chart No. 40, Debt Coverage Ratios for Cities Service Gas Company Actual and Adjusted to a 6-1/2% Rate of Return	16188	6045
Chart No. 41, Debt Coverage Ratios for Mississippi River Fuel Corporation Actual and Adjusted to a 6-1/2% Rate of Return	16189	6047
Chart No. 42, Debt Coverage Ratios for Natural Gas Companies Adjusted to 6-1/2% Return on Net Property and Working Capital	16190	6049

	Original, Print	
Chart No. 43, Debt Coverage Ratios of Panhandle Eastern Pipe Line Company at Various Levels of Net Operating Revenue	16191	6051
Chart No. 44, Debt Coverage Ratios of Panhandle Eastern Pipe Line Company at Various Levels of Net Operating Revenue	16192	6053
Chart No. 45, Effect of Increased Gross Revenue and Taxes upon Panhandle's Net Operating Revenue	16193	6055
Chart No. 46, Calculation to show Rate of Return Necessary to Produce \$5,382,677 — Assuming Various Rate Bases	16194	6057
Tables supporting Various Charts	16196	6061
254, Investors' Appraisal of the Risks of Capital in 153 Stable Industrial Companies for the years 1937 to 1941, inclusive, prepared by Paul B. Coffman	16242	6153
Section I, Complete List of Industrial Companies whose Common Stocks were Listed on the New York Stock Exchange from January 1, 1932 to April 1, 1942, etc.	16246	6161
Section II, Summary showing Computation of "Investors' Appraisal of the Risks of Capital represented by 153 Stable Industrial Companies"	16250	6169
Section III, Working Papers showing the Computation of "Investors' Appraisal of the Risks of Capital" of each of the 153 Stable Industrial Companies	16254	6177

Index, Volume XV. and XVI.

Section IV, Working Papers showing the Computation of "Investors' Appraisal of the Risks of Capital" in the Natural Gas Industry as compared with other Divisions of the Utility Industry for the full Year 1941, etc.	16530	6729
255, Letter of Panhandle Eastern Pipe Line Company dated April 11, 1942 to Mr. Park Chamberlain, and Tabulation of Comparative Statement of Demand Charges under Original and Supplemental Contracts, Panhandle Eastern Pipe Line Company and Michigan Consolidated Gas Company for Detroit.	16582	6833
256, Letter Agreement between Columbia Oil & Gasoline Corporation, National City Company and Missouri Kansas Pipe Line Company, dated September 19, 1930 and Contract dated September 17, 1930	16585	6839
257, Panhandle Eastern Pipe Line Company and Subsidiary Companies Reconciliation of Net Income per books with Estimated Excess Profits Net Income for the year 1941	16595	6853
258, Holding Company Act Release No. 3415 dated April 7, 1942, Findings and Opinion of the Securities and Exchange Commission in the Matter of Columbia Gas & Electric Corporation, File Nos. 59-33, etc.	16599	6856
Order requiring Divestiture pursuant to Section 11 (b) (1) and Redistribution of Voting Power pursuant to Section 11 (b) (2)	16600	6865
259, Weighted Average Earnings — Price Ratios on Common Stocks 153 Stable Industrial Companies	16608	6867

260, Panhandle Eastern Pipe Line Company Status of Proposed 1942 Construction Program, Production and Gathering System South and West of Liberal Station	16609	6868
261, Panhandle Eastern Pipe Line Company and Subsidiary Companies Main Line System Approximate Coincidental Maximum Day Sales during the Winter Periods of 1940-1941 and 1941-1942	16612	6871
262, Panhandle Eastern Pipe Line Company and its Subsidiary Companies Interruptible Customers Curtailment — January 4-12, 1942	16617	6881
263, Panhandle Eastern Pipe Line Company and Subsidiaries Allocation of Adjusted 1941 Costs between Regulated and Non-regulated Sales	16618	6883
264, Index of Gas Rate Schedule of Illinois Natural Gas Company, Michigan Gas Transmission Corporation and Panhandle Eastern Pipe Line Company	16621	6889
Schedule 12, Gas Contract between Panhandle Eastern Pipe Line Company and Detroit City Gas Company, August-31, 1935	1	6889
Supplement 2 of Schedule 12, Supplemental Gas Contract between Panhandle Eastern Pipe Line Company and Detroit City Gas Company, June 2, 1936	1	6920
266, Financial Statement of Indiana Gas Distribution Corporation for Period ended December 31, 1941	16643	6929
267, Panhandle Eastern Pipe Line Company and Subsidiary Companies Comparative Balance Sheets — per books, Comparative Earnings Summary — per books, Adjusted Earnings Summary and Gas Plant — per books as of March 1, 1941, and March 31, 1942	16676	6993
Complaint of City of Detroit and County of Wayne, Complainants v. Panhandle Eastern Pipe Line Company and Michigan Gas Transmission Corporation, Defendants, filed February 28, 1941, Federal Power Commission, Docket No. G-200	16686	7002
Separate Answer of Michigan Gas Transmission Corporation filed March 28, 1941 in Docket No. G-200	16693	7008
Petition of Michigan Public Service Commission for Leave to intervene filed March 31, 1941 in Federal Power Commission, Docket No. G-200	16698	7011
Separate Answer of Panhandle Eastern Pipe Line Company filed April 3, 1941 in Federal Power Commission, Docket No. G-200	16705	7015
Order entered June 10, 1941 fixing date of Hearing in Federal Power Commission, Docket No. G-200	16715	7022
Order entered June 16, 1941 permitting the Michigan Public Service Commission to intervene in Federal Power Commission, Docket No. G-200	16718	7024
Petition of Panhandle Eastern Pipe Line Company filed June 26, 1941 for Continuance of Hearing in Docket No. G-200	16720	7025
Concurring Petition of Michigan Gas Transmission Corporation filed July 3, 1941 for Continuance of Hearing in Docket No. G-200	16728	7030

Objection of City of Detroit and County of Wayne to Defendant's Petition for Continuance of Hearing filed July 3, 1941 in Docket No. G-200	16733	7032
Federal Power Commission's Designation of Trial Examiner	16736	7034
Order entered July 8, 1941 denying Petitions for Continuance of Hearing in Docket No. G-200	16737	7034
Petition of Michigan Consolidated Gas Company for Leave to intervene filed July 10, 1941 in Docket No. G-200	16739	7035
Petition of Intervention	16744	7038
Order entered July 12, 1941 permitting Michigan Consolidated Gas Company to intervene in Docket No. G-200	16755	7046
Answer of Michigan Gas Transmission Corporation to Petition of Intervenor, Michigan Consolidated Gas Company	16757	7047
Answer of Panhandle Eastern Pipe Line Company to Petition of Michigan Consolidated Gas Company, Intervenor, filed August 18, 1941 in Docket No. G-200	16762	7051
Motion to Dismiss filed by Panhandle Eastern Pipe Line Company on August 20, 1941 in Docket No. G-200	16771	7058
Motion to Dismiss filed by Michigan Gas Transmission Corporation on August 21, 1941 in Docket No. G-200	16773	7059
Order of Federal Power Commission denying Motions to Dismiss of Panhandle Eastern Pipe Line Company and Michigan Gas Transmission Corporation	16775	7060
Order of Federal Power Commission entered May 22, 1941 instituting Investigation in Docket No. G-207	16776	7061
Order of Federal Power Commission entered September 2, 1941 consolidating Proceedings for Purposes of Hearing, Dockets Nos. G-200 and G-207	16779	7064
Petition of Panhandle Eastern Pipe Line Company filed February 4, 1942 for Continuance of Hearing	16799	7065
Objection of City of Detroit and County of Wayne filed February 11, 1942 to petition for Continuance of Hearing	16809	7070
Order of Federal Power Commission entered February 17, 1942 denying Petition for Continuance and Changing Place of Hearing in Dockets Nos. G-200 and G-207	16811	7072
Petition for Continuance of Hearing filed by Panhandle Eastern Pipe Line Company and Michigan Gas Transmission Corporation on February 28, 1942	16814	7073
Exhibit A, Limitation Order L-31 to curtail Consumption of Natural Gas	16823	7079
Exhibit A, Areas subject to Prohibitions contained in Paragraph (e) of Limitation Order L-31	16828	7084
Order of Federal Power Commission entered March 26, 1942 enlarging Investigation and making Illinois Natural Gas Company a Party Respondent in Proceeding Designated Docket No. G-207	16834	7088
Motion of Counsel for Federal Power Commission filed April 27, 1942 praying that the Federal Power Commission enter an immediate Order fixing just and reasonable Rates	16839	7091
Motion filed by Michigan Consolidated Gas Company on April 27, 1942 praying that the Federal Power Commission enter an immediate Order reducing Rates	16849	7098

Motion filed by City of Detroit and County of Wayne on April 27, 1942 praying that the Federal Power Commission enter an immediate Order reducing Rates	16853	7100
Amendment to Motion for Order reducing Rates filed by Michigan Consolidated Gas Company on April 28, 1942	16860	7104
Statement relating to Excess Return for year 1941 and Reduction of Gross Revenues required to eliminate Excess Return	16865	7107
Excess Return for year 1941, before Adjustment of Claim for Replacements	16866	7107
Rate Base for year 1941	16867	7109
Income Statement — year 1941	16868	7111
Amortization of Investment	16871	7114
Annual Accrual Rate for Amortization of Property as of June 30, 1941	16872	7115
Annual Accrual for Amortization of Property at June 30, 1941	16873	7116
Depletion	16874	7116 ^o
Excess Return for year 1941	16875	7117
Rate Base for year 1941	16876	7118
Income Statement — year 1941	16877	7119
Adjustments to 1941 Income Statement for Changes in Operating Expenses not fully effective for Entire Calendar year 1941	16878	7121
Stipulation of Counsel for the various Parties and Federal Power Commission Counsel consenting to withdrawal of Federal Power Commission Counsel's Motion for Immediate Order reducing Rates filed May 11, 1942	16881	7123
Motion of Counsel for Federal Power Commission for Immediate Order reducing Rates filed on May 11, 1942	16882	7125
Opinion Number 80 of Federal Power Commission, Memorandum as to Order of Federal Power Commission reducing Rates, September 23, 1942, Memorandum as to	16892	7133
Petition of Panhandle Eastern Pipe Line Company, Michigan Gas Transmission Corporation and Illinois Natural Gas Company filed October 9, 1942 requesting an extension of time within which to file new Schedules of Rates and Charges	16934	7134
Order of Federal Power Commission of October 12, 1942 granting Extensions of Time to Panhandle Eastern Pipe Line Company, Michigan Gas Transmission Corporation and Illinois Natural Gas Company to file new Schedules of Rates and Charges	16938	7137
Petition of Panhandle Eastern Pipe Line Company, Michigan Gas Transmission Corporation and Illinois Natural Gas Company filed October 23, 1942 for stay of the Federal Power Commission's order of September 23, 1942	16940	7138
Petition of Panhandle Eastern Pipe Line Company, Michigan Gas Transmission Corporation and Illinois Natural Gas Company filed October 23, 1942 requesting a rehearing in Dockets Nos. G-200 and G-207	16944	7141
Order of Federal Power Commission of October 30, 1942 denying Petitions for Rehearing and for Stay in Dockets Nos. G-200 and G-207	16954	7150

XXX 11

	Original Print	
Certificate to Transcript of Federal Power Commission	16955	7151
Order of United States Circuit Court of Appeals directing Respondents to Show Cause why Petition for Stay of Rate Order should not be granted	16986	7179
Order of United States Circuit Court of Appeals denying Petition for Stay of Operation of Rate Order without prejudice, etc.	16987	7180
Order of United States Circuit Court of Appeals granting Stay pending further hearing of application therefor	16988	7181
Order of United States Circuit Court of Appeals granting Stay of Order of Federal Power Commission dated September 23, 1942, requiring reduction in rates and charges for gas furnished by Petitioners, etc.	16989	7182
Order of United States Circuit Court of Appeals appointing John G. Hughes as Custodian of Funds to be impounded under provisions of Stay Order	16991	7184
Order of United States Circuit Court of Appeals as to form of record to be printed and fixing time for filing designations therefor	16992	7185
Order of United States Circuit Court of Appeals instructing Custodian as to manner of handling funds and securities in his possession	16993	7186
Order of United States Circuit Court of Appeals authorizing Custodian to purchase certain securities as investments	16995	7187
Order of United States Circuit Court of Appeals directing Petitioners to pay to Custodian certain sums to cover Bond premium, etc.	16997	7188
Order of United States Circuit Court of Appeals requiring Custodian to set up Account No. 1 and Account No. 2, etc.	16999	7189
Order of United States Circuit Court of Appeals authorizing Custodian to purchase certain securities, etc.	17001	7190
Stipulation that coloring matter appearing on certain Exhibits may be omitted from copies inserted in printed record, etc.	17003	7191
Appearances of Counsel for Petitioners	7193	7193
Appearances of Counsel for Respondents	7195	7194
Order of Submission	7199	7196
Order for Resubmission of Case	7200	7196
Order resetting case for argument	7201	7197
Order of Resubmission	7202	7197
Opinion, U. S. Circuit Court of Appeals	7203	7198
Judgment, U. S. Circuit Court of Appeals	7226	7219
Clerk's Certificate to Transcript	7228	7220
Order allowing retainer	7230	7221

[fol. 3207] Q. Well, Mr. Morton, are all of the sales shown in Lines 11 and 12 called "industrial sales in Indiana and Ohio" to be made through distributing companies?

In other words, are any of these sales to be made directly to the industrials?

A. My estimate contemplates no direct industrial sales by Panhandle Eastern. Of course, that is a matter of discretion to the management in years to come; but, as regards this particular estimate we are speaking of, and as far as I have anything to do with it, why, it has been prepared on [fol. 3208] the basis of sales just as they are now being made.

Q. Are all of those sales presently contracted for and being made to persons who are being served?

A. I would say that this estimate of mine, like all of my estimates that I have made here, contemplates some new customers but 95 percent of it is to customers who are now connected.

Q. You cannot give us the names of the new customers?

A. I cannot.

Q. By the term "customers", as you have used it, are you referring to the industrial customers or to the distributing company?

A. I mean both. I think that there will be an increase in the individual customers purchasing from distributing companies over the years, and I think also my estimate contemplates possibly the addition of another distributor or two.

You see, you cannot be too definite about these estimates that run for years into the future.

Q. I do not recall whether I asked you for the page numbers of your working papers?

A. No, you did not, on that particular estimate that we are discussing, and work sheet No. 5 covers all of the details that I have.

Q. And you will submit work sheet No. 5 along with the others?

[fol. 3209] A. Yes, sir.

Q. Now, will you please explain the method used by you in arriving at the estimate shown in Lines 13 and 14 for "Indiana and Ohio-Other (Including Company Use)"?

A. Yes, that estimate covers all of the sales that I estimate will be made in Indiana and Ohio, outside of the industrial which we have just been discussing.

That sale comprises the domestic and commercial sales, principally, of distributors throughout the State of Indiana and a very, very small sale in the State of Ohio; so small as not to merit any extended discussion.

That figure, as I say, is almost entirely a sale of domestic-commercial to distributors in Indiana; namely, Public Service Company of Indiana, Northern Indiana Public Service Company, Central Indiana Gas Company, Indiana Gas Distribution Corporation and Kokomo Gas & Fuel Company.

Now, that estimate, you will notice, increases very slowly from year to year. At the present time, it is running about 5,200,000,000. I estimate—

Q. (Interposing) Just a minute. Five billion—

A. (Interposing) Five million, two hundred thousand, M. c. f.

Q. Thank you.

A. I estimated for 1942 an increase from 5,200,000 to 5,600,000 M. c. f.; next, 6 million M. c. f., 6,400,000 M. c. f. [fol. 3210] 6,800,000 M. c. f., 7,200,000 M. c. f.

Q. That is a flat increase of—

A. (Interposing) 400,000 M. c. f. per year, a rather gradual, nominal increase. That is based upon the fact that I do not see any great expansion of natural-gas consumption in Indiana for domestic-commercial use in the near future.

I do not contemplate any addition of any large number of customers, but just a slow, gradual growth of the presently connected customers, and possibly a very slight increase in new customers.

Q. Are those sales all contemplated to be made by the present distributing companies?

A. Almost in their entirety. The estimate probably includes, and undoubtedly does include, one or two small

distributors not now connected to the line who will subsequently be connected.

Q. And will you name those?

A. I think now particularly of the Greenfield Gas Company.

Q. Any others?

A. At the time the estimate was made, I had in mind also Richmond Gas Company. Since the estimate was made, Richmond Gas Company has come on to the lines and is now taking gas.

No, I cannot name, specifically, any more, but, un- [fol. 3211] doubtedly, there will be, as the years go by, some small distributors not now taking gas who will begin taking gas shortly.

Q. In other words, this estimate of "Other Indiana and Ohio" shown in Lines 13 and 14 did not contemplate any very large new territory?

A. That is correct.

Trial Examiner: May I ask whether that is, in part at least, due to the fact that the States of Indiana and Ohio, or these portions of those States, rather, adjacent to your lines and the line of the affiliate as well as Panhandle Eastern, are presently served from local fields?

The Witness: No, this did not contemplate that fact. This estimate contemplated the fact, I might say, that most of the customers who are within economic reach of our lines through those states are now taking gas from us.

I believe the local areas to which you refer are, in most instances, too far away from our lines to be served by us anyway.

By Mr. Littman:

Q. Before going to the next item, I would like to go back for a moment to the industrials in Indiana and Ohio, the estimate for which is shown in Lines 11 and 12.

What Ohio territory is embraced by your estimate of the industrial?

A. There isn't any of that estimate for industrial gas [fol. 3212] contemplated for Ohio.

Q. Now, do you have working papers in support of your estimates shown in Lines 13 and 14 for other than industrial in Indiana and Ohio? A. Yes.

Q. What are the page numbers?

A. Worksheet No. 6 covers that.

Q. And you will submit that page along with the others?

A. I will be glad to do so.

Q. Now, will you please explain your estimate shown in Lines 15 and 16 for Kentucky Natural Gas Company?

A. We made a contract with Kentucky Natural Gas Company in the summer of 1941. The contract is dated June 27. The minimum provisions of that contract call for their taking 1,650,000 M. c. f. per year for the first three years; 2,500,000 M. c. f. for the next two years, which takes us through 1946.

There was existent at the time of the execution of this contract what we call a deficiency, a certain amount of gas which they were supposed to have taken but had not done so under the minimum provisions of a certain contract.

They were, in other words, 140 million cubic feet short of their contracted takes, so, in arriving at the Kentucky Natural estimate, I was able to follow what I thought was a most logical procedure. I merely used the minimum stated in the existing contract, and added to it the shortage which [fol. 3213] they had left over from other years, and spread it over a reasonable length of time of about two years.

That is about all of the supporting data that the estimator has for the estimate on Kentucky Natural Gas Company; and I might add that I think that is all that was needed.

Q. What was the basis of your determination of the maximum day shown in Line 16 for Kentucky Natural Gas Company?

A. By knowing, as I do, that they have some very good operators who are attempting to take this gas on an even basis, day to day basis, and after watching the deliveries through our connection with them and confirming this, I felt quite assured that they would be able to maintain an excellent load factor through that connection; not 100 percent, because that is almost impossible of attainment due to fluctuations of pressure in the line, but I estimated that they would be able to maintain a 90 percent load factor, that is to say, that their maximum day would not exceed their average day by more than 10 percent.

Q. Do you know whether the contract with Kentucky Natural Gas calls for a uniform take?

A. The contract does not call for a uniform take, as I recall it. It says nothing about their taking uniformly. They are on a two-part rate, so it is to their interest to take on a uniform basis.

Q. Do you have working papers to support your estimate?

[fol. 3214] A. Work sheet No. 7 supports this evidence.

Q. You will submit that along with the others?

A. Yes, sir.

Q. Now, that takes us to the group that you have classified as "West of Dana." First, under this class, is industrial shown in Line 20. Will you please explain the estimate for that class which I have just named and which appears in Lines 20 and 21 of your Exhibit 40?

A. The average figure over the years is rather substantial, averaging about 14 million M. c. f. under this classification. Much of the gas we sell west of Dana, and when I say "we" this time, I am really over in our own territory, in the Panhandle Eastern territory and Illinois Natural Gas territory.

Much of the gas, as I was saying, that is sold over here is sold directly by us to industries. It comes right out of our line and goes right to the brick plant or the industry, whatever it may be, and we bill the customer directly for it.

About five-eighths of it is sold to Other Distributors who, in turn, resell it to industries.

The work sheet which is, by the way, No. 8, indicates the history, by months, of these sales to industries direct and indirect since April, 1939. Our records are very complete. We could have carried it back to 1936, but we thought that [fol. 3215] would be enough history upon which to base the future estimate, so the work sheet shows the details from 1939, by months.

It indicates that for 1940, the sale was 1 1/2 billion; it indicates that for 1941 and we had six months actual and we used six months estimated, will be about 14 billion.

We next go to work sheet No. 9, which is also a part of this estimate, showing the estimate for the future and

there, I have shown on that work sheet that the sales for 1941 will be 13 billion; 1942—14 billion; 1943—14 billion 300 million, and so on, with a very gradual increase over the years.

I have not estimated any great increases in that territory, on the theory that we are now serving almost all of the market that is available to natural gas pipe line.

Q. I note that you have an increase of one million M. c. f. in 1942 over your 1941 estimate, whereas, in subsequent years through to 1946, your increases are approximately three to five hundred thousand M. c. f. Can you explain that situation?

A. I can. The rate of increase at present is sufficient to justify, in my judgment, an increase of one million M. c. f. between 1941 and 1942. Past history supports that.

Now, as for the future, I do not see anywhere in the territory justification for assuming that the rate of increase will be as rapid as it has been in the past.

Therefore, the increase of 1943 over 1942 will be considerably less than 1942 over 1941. It is just a matter of not [fol. 3216] having the business there.

Q. Are the sales shown in Lines 20 and 21 to the industrial west of Dana for all of the years shown in Exhibit 40, sales to presently connected customers, or does your estimate contemplate sales to other customers as well?

A. Almost in their entirety, I would say as much as 95 percent are to be made to presently connected customers. You can see that the increases, as I have shown down through the years, are very modest.

Therefore, you would naturally judge from this that there isn't going to be a great increase in the number of new customers. I suspect, sitting here studying this estimate, that it is too conservative.

Q. Will you submit the work papers for this latter estimate, please, which are, I believe, Nos. 8 and 9?

A. Yes, I will be glad to.

Q. Now, that leaves one more: And that is the domestic and commercial sales west of Dana shown in Lines 22 and 23. Will you please explain the method followed by you in arriving at these estimates?

A. That is a companion estimate to the one that we have just discussed. We talked about the industrial west of Dana and now we come to the domestic and commercial sales west of Dana on the system of Panhandle Eastern and Illinois Natural Gas Company, main line only.

[fol. 3217] We have in our records, and I show here on the work sheet, which is No. 10, the sales which we made to that class of business in 1938, 1939, and 1940, and it is noted that the growth per year is about 500,000 M. c. f. I do not see ahead of us in that territory any rapid expansion of our facilities or any large cities to be added other than, I might mention, Bloomington and Normal and Galesburg, Illinois.

As I say, I do not see any great expansion ahead of us, so I have merely estimated a flat increase of approximately 500,000 M. c. f. per year. The supporting statistics are a little more in detail than they have been on some of those estimates farther to the east, as you will note from the work sheet No. 10, probably due to the fact that we have at our finger tips there in the Kansas City office considerably more data on the characteristics of these sales than we do some of the sales farther east.

My work sheet shows that I estimate the customers to increase from 145,000 which they are approximately at this time—

Mr. Culton: (Interposing) You mean the customers of the distributing company?

The Witness: The customers of the distributing companies. From 140,000, instead of 145,000, from 140,000 as they are at present to 145,000, 150,000, 155,000 and so on, increases of about 5,000 customers per year which is purely a judgment figure, and I believe that is all that I have to offer unless you have specific questions on that.

[fol. 3218] By Mr. Littman:

Q. What are the work sheets for Lines 22 and 23?

A. That is covered by work sheet No. 10.

Q. Will you please submit that along with the others?

A. Yes, sir.

Q. Referring to the lines which are called Max-Day in Exhibit 40, are the amounts shown in those lines the ac-

tual maximum day expected for each class, or does it merely represent the contribution expected by each class on the expected peak day? Which is it?

A. The record I am quite sure is clear on that point, because on direct examination I testified, and I am repeating again, the maximum days shown on this estimate are the contributions of the respective loads to our system.

Q. Did you make any estimates of the actual peak loads to be expected for each class?

A. No, I dealt strictly in terms of the contributions on our maximum day.

Q. Now, do you have any further working papers in support of your estimate shown in Exhibit 40 which we have not called for, Mr. Morton?

A. I made none. These are the only working papers which I made, except, of course, scratch sheets upon which I made additions and threw in the waste basket.

[fol. 3219] I purposely retained them all because I knew you would want to have a good, clear record of what was done and how it was done.

Q. Now, Mr. Morton, in your judgment as rate engineer of Panhandle Eastern Pipe Line Company, do you expect these sales shown in your Exhibit 40 to be made, in fact, in the years 1941 to 1946, inclusive?

A. Yes, I do.

Q. And, in your judgment, this estimate is conservative, is it?

A. No, I am not going to tell you that. This is right on the nose as far as I know. It is not conservative nor is it the opposite. I think these are exactly the quantities that will be sold.

Of course, when I say "exactly," you understand what I mean: That this is exactly my estimate but that, of course, that they may be wrong 5 percent one way or the other or 10 percent.

Q. Up or down?

A. Up or down.

Q. Mr. Morton, I believe you testified on direct examination that you had prepared this estimate originally for the purpose of advising the management of the sales that might reasonably be expected in the next five years. Is that a correct statement?

[fol. 3220] A. I recall very well, and I am glad that you brought up that subject.

The inference of the question, although it did not show in the record, the accent upon the words when the question was asked me, left the impression in my mind that the interrogator wished to know whether we had warped this estimate for the purpose of establishing some point before this Commission and I hastened to add that the estimate had been prepared—I cannot recall the exact words—but I denied that there was anything special about it.

Now, I would like to make a complete statement about this: This estimate is made in response to a request from the management to me. The management requested me to make this estimate knowing that this rate case was coming up.

They wanted me to set the figures down in my own way and as honestly as I could, those were my instructions, to make an honest, straight-forward estimate of the sales for ten years because, they said, "We think we are going to need it in this rate case".

That was the way the assignment came to me, long before we had made our plans as to what our defense would be in this case, at one of the early meetings, so I sat down and I started building up an estimate for a ten-year period for use in this rate case.

.

[fol. 3221] Q. Have you, at any time, made any estimate of the revenues expected to be derived from the sales shown in Exhibit 40?

A. I had no occasion to do so, and did not do so.

Q. Have you made any estimate of sales on behalf of the management with respect to future years.

A. I have not had occasion to advise the management except in so far as 1942 is concerned. I have, within the last few weeks, prepared our budget for 1942 of the sales that we expect to make, with the revenues.

Q. In other words, you have an estimate of the 1942 revenues? A. Yes, I do have.

Q. You do not have such an estimate for 1943?

A. No, I do not.

Q. I presume your 1942 estimate of revenues is predicated on your Column D in Exhibit 40, is it not, or something close to it?

A. It pretty closely approximates Column D in Exhibit 40. I was a little surprised to find out how close it did come, having been made four or five months after this [fol. 3222] one. You understand, don't you, that if I would make another estimate today it would necessarily be different from this one that we are looking at.

Trial Examiner: Mr. Morton, may I ask whether the company has maintained an active sales promotion policy during recent years throughout the territory served by Panhandle Eastern?

The Witness: Mr. Examiner, that is a question that goes to management. I might just tell you what I think of it, though, since you have asked me, but I wish you would please understand that there is always danger in a rate engineer's testifying for the management's policies.

We maintain, what I personally think is an active new-business policy. That is merely personal opinion. I think that we work hard at getting new business.

Trial Examiner: Is that true throughout the system? In other words, do you try to pick up industrial and commercial customers wherever possible throughout the system?

The Witness: Yes, we do. We work at that thing, whether it is on Panhandle Eastern property or some of the distributors' property.

Trial Examiner: So that, your answer to my question would be that you have maintained an active sales promotion policy in recent years?

The Witness: Yes, sir.

Trial Examiner: Throughout the system?

[fol. 3223] The Witness: That is my opinion.

Trial Examiner: I was going to simply ask again the question that was asked yesterday, whether your estimate of future sales contemplates the continuance of an active sales promotion policy throughout your system.

The Witness: Yes, it certainly does. Now, when you tie that to my estimate, why, I feel a little bit better than answering to these policies about the company.

Trial Examiner: And your estimate contemplates what you consider the maximum safe estimate of expansion based on a continuance of present policies?

The Witness: Yes, it does.

Trial Examiner: And it takes into account also, the ability of your company to fill the demand if your estimate is correct?

The Witness: Yes, it does.

By Mr. Littman:

Q. Mr. Morton, I believe you said if you were making this estimate today you might have a different result. Would you expect the result to vary materially from that which you show in Exhibit 40?

A. I would not. Some of those years would be up and [fol. 3224] some down, I suspect. I know some of the accounts would be up and some down.

Q. But over-all, it would remain more or less the same?

A. That is true.

Q. Now, how did your most recent 1942 estimate compare with that which is shown in Column D of Exhibit 40? Was there much variation up or down?

A. There was not over 3 percent variation up or down.

Q. Was it up or down?

A. It was down. Some sales have not materialized as rapidly as I anticipated last August and the reason is quite apparent. Our inability to get shipments of pipe is going to delay us beyond the period when I expected that we would be able to start making these sales up there in Michigan shown on Lines 5, 6, 7, 8, 9, of this study.

That Michigan situation has moved back six months, I would say, due to our inability to get pipe shipments. Of course, at the time I made this, things looked a good deal rosier. As I say, it was early August.

Mr. Culton: That is so far as getting pipe is concerned?

The Witness: Yes, sir.

Mr. Culton: That is what you mean by "rosy"?

The Witness: Yes, sir, that is what I mean by "rosy".

By Mr. Littman:

Q. The picture, in so far as it concerns the sales of [fol. 3225] gas still looks about as rosy today or more so than it did before? A. It does.

[fol. 3227] By Mr. Littman:

Q. I will ask you this, Mr. Morton: Whether or not you have at any time prepared any estimate of revenues for the years 1943, 1944, 1945 and 1946, or any one of those years?

A. I honestly do not know whether I have done so or not. Now, there are occasions, as you know, when I am requested to make up this kind of estimate or that kind of estimate. That is my business, this estimating.

I want to say this to you, that there is not existent in my office, nor have I made an estimate that you could put along side of this one here and compare it with this one.

In other words, your question, and I have heard it before, sounds like you would like to know if I have made estimates as a regular routine thing for the management to keep them advised, in a form about like this, for three or four years—

Q. (Interposing). Referring to Exhibit 40?

A. Yes, referring to Exhibit 40, for three or four years in advance. We do not carry such a thing. We only work one year in advance. That is all we need to work, one year in advance.

Now, every fall, as I have said before, we go to work and we prepare budgets covering the next year's work and we prepare all of that stuff in detail; but we do not have an [fol. 3228] estimate anywhere in the office, nor have we ever had, so far as I know of, anything like this that we are talking about, this Exhibit 40 and its supporting papers.

Q. Well, I was not necessarily referring, Mr. Morton, to an estimate that you could lay side by side with exhibit No. 40 and say this is the revenue for this, that or the

other class. I had reference, when I referred to the years 1943 to 1946, inclusive, whether you had submitted any estimates to your company of revenues to be expected in those years from sales to, for example, Consumers Power Company or this, that, or the other company.

Have you ever submitted such estimates?

A. I have submitted estimates to them covering Greenfield and Bloomington and Galesburg for three or four years in advance, little individual projects like that.

Now, on this Consumers Power, I did not make up any other estimate myself on Consumers Power, but an estimate certainly was made up on Consumers Power and, as you see here, from these work sheets in my file.

I have looked at it. I do not know how many years in advance it is. * * * To answer your question, I know of no estimates that I have made around that office for future years for any project except the smaller towns like those I have mentioned.

[fol. 3229] Q. Mr. Morton, you could estimate, could you not, the revenues expected to be derived by Panhandle Eastern and subsidiary company from the sales shown in Exhibit 40 based on present rate schedules, could you?

A. I could.

[fol. 3230] Trial Examiner: The Trial Examiner has several times wondered exactly the field the Defendant has opened up by asking for inclusion in the future rate base the estimated cost of future construction and future betterments.

[fol. 3231] Mr. Culton: Mr. Examiner, at the proper time the Defendant will not insist that the future construction which will be required to produce additional volumes of gas is necessary for consideration in determining whether or not the present rates are excessive.

It will insist that the additional costs required to produce and transport the same volumes of gas now being produced and transported are matters that should be taken into consideration in determining whether or not the rates are excessive.

It does take the position, and will take the position at the proper time, that the future capital expenditures required for the purpose of producing and transporting additional quantities of gas are necessary for consideration of the Commission in determining the return which the Defendant company should be permitted in the future in order to attract capital necessary for the making of the additional expenditures.

Relating this case to the Chicago case, I point out that in the Chicago case the line was already loaded and the future capital expenditures were not expenditures for the purpose of producing additional quantities of gas but expenditures required for the purpose of carrying on the then volume of business, and that is the contention which we make in this case, that in determining whether or not the present rates are excessive, the Commission should take into consideration the expenditures which will be required in the future to produce, transport and dispose [fol. 3232] of the same volumes of gas now being handled and that the capital expenditures required for additional volumes of gas are for consideration in determining rate of return, as such. That is, the number of dollars we are going to be required to go to the public for and get in the future.

Mr. Littman: If your Honor please, it seems to me that the picture Mr. Cutton paints will be incomplete without the data with respect to the revenues to be derived from these increased sales.

[fol. 3233] O. W. Morron, the witness under examination at the time of the taking of the noon recess, resumed the stand and testified further as follows:

Cross-Examination—Continued.

By Mr. Littman:

Q. I believe that at the noon recess I was stating the reasons for the request which I made of this witness to supply, first, his estimate of revenues to be derived from sales of gas shown in Exhibit 40, which estimate, according to the testimony of this witness, was prepared and is

in writing, and is in his office, and he expects to submit it to the company as his estimate of revenues for the year 1942. Secondly, I request that this witness submit an estimate of the revenues expected by him to be derived from sales of gas shown in Exhibit 40 for the years 1943 to 1946, inclusive.

[fol. 3234] Mr. Wheat: The gross revenue which will result from the application of the figures shown by the witness in Exhibit 40 for these respective years, based on the present rate schedule.

By Mr. Littman:

A. On this exhibit I have plotted cost of gas plant against total annual sales on the system; the scale applying to gas plant reads in the millions of dollars, and the scale applying to annual sales is in billions of cubic feet. It will be noted that the sales over the past three years have increased at the rate of approximately 7 billion cubic feet per year.

The only significance that I personally am able to draw from this is the fact that in the light of the performance of the past few years, the estimate for the future, with respect to annual sales in M. c. f. is not out of line. In other words, our past performance indicates that we [fol. 3236] have been growing very rapidly, at the rate of about 7 billion cubic feet per year, and this detailed study of future years, this estimate of mine, Exhibit No. 40, shows about that same growth, so that is about the only significance that I attach to this Exhibit 41.

Q. Now, what is the source of the figures for the curve "Gas Plant—classified?"

A. That is the book records of the company, and the statistics supporting that curve are shown in one of Mr. Watkins' exhibits. I have merely plotted some of the figures that have been hitherto offered in this case.

Q. I will hand you a copy of Mr. Watkins' Exhibit 52, and ask you whether page 2, line 38, of that exhibit, entitled "Total Gas Plant—classified," shows the figures that you have used for that purpose in your chart, Exhibit 41.

A. They appear to be identical; these appear to be the figures I used.

Q. "In other words, you can't tell from the chart the exact dollars nearly so well as you can from this exhibit?"

A. That is correct; for all practical purposes these are the figures.

Q. Yes. Now, are the figures representing the curve "Annual Sales" the same as those appearing in column "Q" of Exhibit 58; and I hand you a copy of Exhibit 58?

A. They are.

[fol. 3237] Q. The Examiner has asked you about sales promotional work, and I would like to ask a few additional questions with respect to that:

Now, your company sells only to utility and special industrial companies; does it not?

A. Yes, that is true.

[fol. 3239] Q. Well, you expected then a vigorous sales promotional activity to get the results that you set out in Exhibit 40, did you not?

A. (Interposing) I expect some of those results will come about without the necessity or without the assistance of a vigorous sales campaign, but I believe the total would be achieved only through it, and that is what I was referring to; the total would be achieved only through some vigorous sales promotion policy.

[fol. 3240] Q. Now, does that sales promotional department spend its time soliciting and adding new business or in retaining its old business?

A. Our sales efforts are directed to both; we have no sales department as such, so I can't answer your question as respects a sales department, but the promotion efforts of our company are directed along the lines of retaining the old business and adding new customers.

Q. In allocating that expense, however, you have allocated all of it to unused capacity, did you not?

A. In this unused-capacity study, I regarded sales promotional expense as just as much an expense of doing business as any of the other expenses, and I did include it in my calculation of operating expenses attributable to unused capacity, but I didn't use the entire amount in the final answer.

[fol. 3241] Q. You didn't use the entire amount?

A. No. I started with the total amount, but when you finally come through to the final figure which appears away over on the right-hand column, around \$5,500,000, only a fraction of the expense attributable to sales promotion finds its way into that figure.

Q. What proportion, then, finds its way into the final figure?

A. I would say very close to 50 percent, during those early years. In other words, I say by this study of mine, using the 1938 unused capacity, I say that in my opinion, in the opinion of the estimator, that 50 percent of certain operating expenses during all these early formative years was attributable to unused capacity, and in this expense is listed what we refer to as business promotion.

Q. Now, I take it that you feel it would be necessary for a distributing gas utility to maintain a sales department just the same as your own?

A. Undoubtedly that is true.

Q. And that results in a double loading on the public, or the gas consumer, does it not, in that there is a loading of expense in which you seek to promote sales to the distributing utility, and again when the distributing utility seeks to promote sales to the public: Is that correct?

A. I think I would object to the use of the term "loading" [fol. 3242] on the public. In all business there is expense connected with its operation, and we all know that the public finally bears the expense of running a utility, in our case, and in your case in Detroit the same as in our line; so I think it is a little unfair to ask a man to testify that we are loading on the public some double charges because we maintain sales promotion efforts in both our transmission lines and in our distribution efforts.

Q. I am asking you just the plain fact whether or not that constitutes a double charge or loading on gas consumers for sales promotion.

A. I have explained my position and I think I made my answer clear to that question.

[fol. 3281] By Mr. Chamberlain:

Q. Now, referring to your Exhibit 38, you spoke of attempting to ascertain the cost of the unused capacity in the main line. What did you mean by that?

A. I meant by that, that in my judgment, there was a period during the operating of this pipe line when it was operating at considerably less than its designed capacity or the capacity for which its [designors] had built it; and that it cost the company some out-of-pocket money to carry this unused capacity over what I have termed the lean years and that these costs, consisting of actual out-of-pocket interest, ad valorem taxes and certain operating expenses, were incurred because of such unused capacity and I attempted in this study, of course, to make a mathematical calculation on five different methods as to what those costs attributable to unused capacity should be.

Q. Let me put it this way, or let me put a question this way. In the letter which you directed to Mr. Neuner and which you read into evidence yesterday, you suggested that, in arriving at going value, recognition should be given to the fact that the company had, during its early years, idle capacity, and now I quote: "which has been made in advance of the time when it was to be used because it was economical to do so."

Now, will you expand on that a little bit and give us your [fol. 3282] rationalization of why you should have an allowance for the unused capacity of the transmission line?

A. I think it is quite clear Mr. Chamberlain, to all of us, and I think you probably have heard Mr. Biddison explain this same thing, that it is impossible to build what we term a "rubber pipe line" that would expand with the increasing markets.

It would be uneconomical to build a 4-inch line to carry the first year's business and an 8-inch line to carry the second year's business, and so on.

The designers of this pipe line system apparently expected to get a load that would fully fill a pipe line of 24,

22 and 20 inch capacity, so they built one of that size, expecting to fill it with gas because it was economical to build a pipe line that size.

They only put three compressor stations on it, but it was designed for 11. So, during those early years, when it had those three compressor stations on that size line, it had a capacity of only 80 million cubic feet.

That was all the gas it could carry. Later on, when they added the full complement of the compressor stations, it had a capacity of 125 million.

Now, in that interval between the time they built that line and the time it started carrying its full load of 125 million, there was some unused capacity in the line and it was [fol. 3232] the cost of carrying that unused capacity that I tried to measure here in dollars and cents.

Q. Well, is it fair to say that you are approaching it from the standpoint of a distributing electric utility which is building a large power plant and over-building for the present time to take care of what would be reasonably anticipated for its future needs?

A. Well now, there are some points of similarity in the two things, but there is more flexibility in the case of the power plant than there is in the case of the thing we are talking about.

They can expand gradually as the load comes on. They do not have to install all the capacity needed to carry their final load at the outset. There is some similarity, yes, but [fol. 3284] the degree is considerably different, as I say.

[fol. 3291] Q. Mr. Morton, what is the relative capacity of a pipe line, let us say, one twice the diameter of the other?

[fol. 3292] The Witness: I think Mr. Chamberlain means what is the carrying capacity at certain pressures or at any given pressure in a pipe line, let us say 2 inches as compared with one having a diameter of 4 inches.

By Mr. Chamberlain:

Q. Yes.

A. What is the relationship of diameter to capacity. Now, I cannot answer that from memory, Mr. Chamberlain. I could tell you this much, that it is not a very hard job, but that it would probably take 10, 15 minutes, maybe, for me to work out enough information to satisfy myself that I had answered that correctly from Weymouth's formula.

The capacity of the pipe line varies, not directly with the diameter, but as some power of the diameter and, for the moment, the power has escaped me, but I believe it is the eight-thirds' power of the diameter so that, if my recollection is correct, then the pipe line that is twice as large as the other would carry 2 D to the eight-thirds' power—well, [fol. 3293]—it is diameter to the eight-thirds power as compared to the other diameter to the five-thirds power.

Q. All right. What I am trying to get at is, there is an economy and a very substantial economy, if you were going to develop the given capacity, by building one large main instead of two small ones which would afford you the same capacity?

A. Yes, there is economy in building the larger pipe line, of course.

Q. You were using a rule-of-thumb here yesterday. Now, you know the rule-of-thumb by which these natural pipe lines have been projected and talked about. What has been used in the industry as [a] example of the cost of building a pipe line per inch of diameter per mile?

A. I am sure you are speaking of the \$1,000 per inch of diameter.

[fol. 3294] Q. That is right. Then a 10-inch line under that rule-of-thumb would cost about \$10,000 a mile, is that right?

A. Yes, under that rule, that is right.

Q. Whereas a 20-inch line would cost about \$20,000 a mile? A. Yes.

Q. And the one would have, to be very careful, three to four times the capacity of the other one, would it not?

A. Yes, sir, correct.

[fol. 3295] Q. If you had a load of 40 million feet of gas a day and you wanted to build a pipe line with a capacity of 80 million, what proportion of the cost would be for this excess capacity?

A. It would depend entirely on what you wanted to make it, whether you wanted to approach it on a straight proportional basis or on the increment cost basis. There are arguments both ways.

[fol. 3302] Q. All right. Now, land rights and land, did you buy any greater right-of-way than you would have, had you had a line of half the capacity?

A. Now, that I cannot say because I did not go, as I say, into the individual accounts that go to make up this story. I just tackled it from an over-all standpoint.

Q. Don't they have a standard right-of-way for these natural gas pipe lines?

A. I guess I sound dumb, but I don't know that.

Q. You do not know that, but supposing I put this to you and see if you know this. Would it require a wider right-of-way to lay a 24-inch main than a 16-inch main?

A. I do not know.

Q. You know you have paralleled your lines in many cases on the same right-of-way that you had to start with?

A. I know we have paralleled the line, all right, but I do not know about the right-of-way arrangements.

[fol. 3303] Q. Now, I understood your testimony yesterday that you were attributing to unused capacity, let us say just abstractly, 55 percent of the general and administrative expense covering the 4½ year period. Is that in general right?

[fol. 3304] A. In general, that is true.

Q. Now, rather than state what I understood, will you state again your reason for allocating that proportion of the general and administrative expenses to unused capacity?

A. That goes back to the entire conception of what the study is for.

Q. You are talking about your study?

A. Yes. As I stated many times before, we built a pipe line which was intended to take care of a certain load because it was economical to build a pipe line of that size.

Now, during the early years of the project, it did not carry the load for which it was designed and by five different mathematical ways, I have indicated what percentage of the project I thought was not being used during those early years, and I attempted, by use of those percentages, to arrive at what seemed to me to be fair measures of the cost of carrying unused capacity, and those costs consisted of interest charges, ad valorem taxes, and operating expense.

There may have been others, but those are the only three that I used.

The reasoning generally was this, and I am getting closer to your question, that since there was, let us say, 50 percent unused capacity in this project during, let us say, 1934, then it followed that 50 percent of the expense of running this big project could be allocated reasonably [fol. 3305] to this unused capacity.

Of course, we did not take 50 percent of all of the operating expenses because we realized that some of them would cause a good deal of argument if we put them in here and it would be a little difficult to justify something that, right on the face of it, had no connection with unused capacity, so we threw out some of them but, in general, that is what we did.

Since we had 50 percent unused capacity during those years, I took 50 percent of certain operating expenses as having been incurred on account of keeping in running shape this project.

Q. Well, you took the 50 percent of general and administrative expenses, did you not?

A. Yes, I did.

Q. And that was on the theory that you were staffed with sufficient employees to operate a plant transporting its full capacity, is that right?

A. I do not know whether that exactly applies or not. I think about all we could say about that is, that since it appeared that 50 percent of our capacity during those years

was not being used, then 50 percent of our expense during those years was there because of unused capacity.

Q. Well now, let's apply that a little more concretely. That includes the salary of the president, does it not?

A. Yes, undoubtedly that did.

.

[fol. 3310] Mr. Littman: Mr. Examiner, in accordance with our usual policy of endeavoring to clear up the situation with respect to exhibits as each witness completes his testimony, I would like to make a statement with respect to the exhibits of Mr. Morton.

We have no objection to Mr. Morton's Exhibit No. 40, "Estimated Main Line Sales, Years 1941-1946, Inclusive."

We have no objection to Mr. Morton's Exhibit No. 41, which is a chart entitled, "Panhandle Eastern Pipe Line Company and Subsidiary Companies-Sales and Gas Plant by Years".

We do, however, renew our objection to Exhibit 38, which was submitted by Mr. Morton. I have stated on this record the basis of our objections to Exhibit 38. Briefly, to reiterate our position, it is simply this:

We object to any evidence in this proceeding relating to a separate allowance for going concern value. We believe that such a separate allowance will not need to be made in this case so, in the first place, we reserve our objection on that score throughout the entire proceeding.

Secondly, the evidence submitted by Mr. Morton cannot conceivably furnish a proper basis for going concern value. As we have already stated, the exhibit simply undertakes to allocate a portion of past operating expenses, [fol. 3311] and past taxes and past interest to a so-called total which this witness calls "attributable to unused capacity."

This so-called capacity has no relation, in our opinion, and I believe in this witness' opinion, to the physical capacity of this pipe line system. It includes expenses which are obviously unconnected with any unused capacity of the pipe line system.

Some of those, as your Honor will recall, are distribution system expenses incurred in connection with the operation of distribution systems which are not even now owned by Panhandle Eastern Panhandle Pipe Line Company.

They include the cost of reading meters in communities in Kansas and Missouri, the cost of repairing services and mains, the cost of advertising, the cost of soliciting customers. It includes an unascertained amount of interest paid by a number of subsidiary companies whose operations had nothing to do whatever with the operation of the main pipe line system which is the subject of this proceeding.

But assuming that all of those expenses were proper and could be capitalized into a rate base under the guise of going concern value, we believe that the evidence fails to support the method used by this witness to arrive at the amounts properly applicable or attributable to unused capacity.

Those, briefly stated, are the grounds for our objection. We believe that this exhibit, namely, Exhibit 38, should be [for 3312] excluded.

Trial Examiner: Some reference was made yesterday to further data that had been requested of Mr. Morton and I would like to know whether the data, which, I assume have not been furnished, will have reference to Exhibit 38?

Mr. Littman: Those data will not affect Exhibit 38. Those data relate to Mr. Morton's Exhibit No. 40 and possibly to No. 41, but particularly to Exhibit No. 40.

In other words, we merely want the underlying working papers for Exhibit 40. I believe that counsel on the other side of the table will agree that Mr. Morton's working papers to be furnished, and additional data, such as estimates of revenues, do not have any relation to Exhibit 38 but relate particularly to Exhibit 40.

Trial Examiner: Referring to Exhibit 38, I will ask counsel for Panhandle Eastern Pipe Line Company whether the sums shown in Line 26 comprise merely a part of the sums which have heretofore been charged to the operating expenses of the company and its subsidiaries?

Mr. Culton: They include those items, save and except the excepted items relating to Argus, the Local Area and the transportation of gas.

Trial Examiner: But they do constitute a part of operating expenses which have been charged, as such, on the books of the company?

[fol. 3313] Mr. Culton: That is correct.

Trial Examiner: And the segregation of a part is only for the purpose of allocation to estimate what you term "the cost of developing the business"?

Mr. Culton: That is right, the cost of carrying the unused capacity.

Trial Examiner: Exhibits 40 and 41, so marked for identification, will be received without objection.

.

Trial Examiner: The objections of Commission Counsel to the reception of Exhibit 38, will be overruled and this exhibit will be received for what it may be worth, although there is, in the view of the Trial Examiner, considerable merit in the objection.

The fundamental bases stated in the objection will, of course, be given consideration when the evidence is reviewed.

.

[fol. 3316] P. McDONALD BIDDISON, a witness, having pre-
[fol. 3317] viously been duly sworn, resumed the stand and testified further as follows:

.

[fol. 3334]. Mr. Littman: I wanted to be straightened out on just what Mr. Biddison was referring to when he referred to the cost of developing the business, whether he was referring to the two items or one; namely, payments to utility companies and, carrying costs on that portion of plant idle pending development of business.

.

The Witness: I refer to the sum of the two.

By Mr. Wheat:

Q. As used by you in your exhibit what?

A. Well, I have used it in Exhibit No. 39 and I have used it in Exhibit 62.

Q. At least, you have used it in those two exhibits which already have been made the subject of a refusal order by the Trial Examiner, is that correct?

A. That is correct.

[fol.3574]. P. McDONALD BIDDISON, a witness, having been previously sworn, resumed the stand and testified as follows:

Redirect Examination (Continued).

[fol.3579]. Mr. Littman: (Interposing) Pardon me, Mr. Culton.

Do you mind if I ask one question to clear up something?

Mr. Culton: Go ahead.

Mr. Littman: Mr. Biddison, with respect to the breakdown by you just referred to in Exhibit 39 from Page 156 to 350, did you use that breakdown in connection with making your determination of depreciation?

The Witness: Yes, sir, I did.

Mr. Littman: To what extent? Would you mind telling us to what extent you used that breakdown?

The Witness: This equipment in Exhibit No. 39 is summarized by classes of use and location on Page 155 of Exhibit No. 39.

That summary is a summary of the data on the succeeding pages which details the installations and that summary on Page 155 is the data shown in Column B and Column A on Page 19 of Exhibit 62, and it is the data to which, in my working papers, I made application of the figures of percentages to be deducted for depreciation.

Mr. Littman: Do I understand that you arrived at a percent of depreciation for each and every item of equipment [fol. 3580] ment listed on Pages 156 to 350, inclusive, of Exhibit 39?

The Witness: I do not know whether you understand that or not, but I want you to distinctly understand that you should not understand it that way, because I have explained it otherwise.

I determined an amount in percentage to be deducted for depreciation for each class and location of property in the recapitulation sheet on Page 19 of Exhibit 62.

Mr. Littman: In other words, you worked from the recapitulation sheet shown on Page 19 of Exhibit 62, rather than from the details shown from Pages 156 to 350?

The Witness: That is right. The things which I saw are the details which are shown in the various pages of Exhibit No. 39.

The things to which I applied my percentage, resulting from those observations, are the items appearing in Column B on Page 19, Exhibit 62.

[fol. 3638] By Mr. Wheat:

[fol. 3639] Q. Now, Mr. Biddison, when approximately did [fol. 3640] you make the inspection to which you have testified with respect to the company's pipe line.

A. This inspection began, starting from Amarillo on August 17, 1941. I continued over the system to its eastern end, returning to Kansas City upon August 26, 1941.

I did not do any inspecting on Sunday, the 24th of August nor upon Thursday, the 21st of August. I did, at a later date, however, inspect Louisburg compressor station and Olpe compressor station.

Q. Did anyone accompany you on this inspection trip?

A. Yes, sir, I was accompanied by two engineers.

Q. Please state their names.

A. Of the Federal Power Commission's staff.

Q. Who were they?

A. Mr. Shattuck and Mr. Bodner, except they did not accompany me upon my inspection of Louisburg station and Olpe station.

Q. Now, prior to the commencement of this inspection trip on August 17, 1941, at Amarillo, Texas, had there been any discussions of such an inspection and, if so, what were they, and please detail for the record what the situation was in that respect?

A. I began work on this Panhandle Eastern situation in preparation for this hearing on July 22 at which time I attended a conference in Kansas City.

[fol. 3641] Q. Generally, who was present and what was the nature of the conference?

A. I cannot give a list of those present because I do not have such a list.

Q. Do you remember, in general, who were there?

A. Well, I know, of course, that I was there, and that Mr. Burnham was there, Mr. Creveling, the president of the company; Mr. Paxton.

Q. Who is Mr. Paxton?

A. He heads their accounting force from Kansas City. He is secretary and treasurer, I believe, is his title.

Mr. Neuner, the operating vice-president, was there. I believe Mr. Glenn Clark, the company's attorney, was present at the conference, and I believe Mr. Carl I. Wheat and Mr. Don Culton were present at that conference.

Q. Yes. What was the general nature of the conference?

[fol. 3642] A. The general nature of this conference was to discuss the question of how to prepare for this hearing on which a date had been, at least tentatively, set.

Q. And was anything discussed at that conference with reference to the inspection of the company's physical properties for the purpose of determining the amount of depreciation or loss of value which had occurred therein?

A. Yes, that matter was discussed, and it was understood, as a result of that conference, that I would make the inspection and that the representatives of the Federal

Power Commission would be given an opportunity to see, during that inspection, whatever I saw.

Q. Do you know, Mr. Biddison, whether a communication was addressed by the Panhandle Eastern Pipe Line Company to the Federal Power Commission in connection with or inviting representatives of the Commission to accompany you on this tour of inspection?

A. I know it was understood at that conference that that would be done and that subsequent events indicated the invitation had been extended.

Mr. Wheat: I would like, Mr. Examiner, to read this short letter into the record and I will hand the copy to the reporter and it is understood with the Commission that if, on examination, it does not check with the copy they received, we will discuss the matter and make the check.

[fol. 3643] Trial Examiner: Very well.

Mr. Wheat: All right, sir.

This is dated July 23, 1941.

"Federal Power Commission, Washington, D. C.

Attention: Mr. Leon M. Fuquay

Re: City of Detroit and County of Wayne vs. Panhandle Eastern Pipe Line Company and Michigan Gas Transmission Corporation—Docket No. G-200.

"Gentlemen:

"In connection with the above proceeding, Mr. P. McDonald Biddison, Consulting Engineer, Dallas Gas Building, Dallas, Texas, is making a valuation of our physical properties. Commencing on or about August 4, he will make an inspection tour for the purpose of determining the present condition of these properties, and during this tour he will inspect portions of our pipe lines which are to be uncovered at various locations designated by him.

"Thinking that the Commission, through one of its engineers, might wish to observe the condition of these properties in connection with this case, or in connection with its own investigation under Docket No. G-207, we invite you to designate some member of your staff to accompany Mr. Biddison on this tour. His transportation over our

system would be provided by this company and should he desire to inspect portions of our pipe lines not uncovered for the purposes of this inspection tour, we will be glad [fol. 3644] to cause such other portions to be uncovered for his inspection.

"If you desire to avail yourselves of this opportunity to inspect the physical properties of this company, please give us the name and address of the one you designate to make this trip and we will have Mr. Biddison contact him as soon as possible.

Very truly yours,"

I believe it was signed by J. D. Creveling, as president of the company.

By Mr. Wheat:

Q. Now, Mr. Biddison, do you know whether the Panhandle Eastern Pipe Line Company received an answer to that letter from the Federal Power Commission?

A. Yes, I saw a reply, a telegram which I think was in reply to the letter which you have read.

Q. Well, is the letter which I show you under the letterhead of the Federal Power Commission the reply itself?

A. Yes, I have previously seen that letter.

Mr. Wheat: This letter is under the letterhead of the Federal Power Commission, Washington, dated July 26, 1941.

[fol. 3645] "Mr. J. D. Creveling, President,
Panhandle Eastern Pipe Line Company,
1221 Baltimore Avenue,
Kansas City, Missouri.

Re: Docket No. G-200, Panhandle Eastern Pipe Line Company and Michigan Gas Transmission Corporation

Dear Sir:

"This is to acknowledge receipt of your communication dated July 23, inviting a member of the Commission's staff to accompany Mr. Biddison in an inspection of your properties in connection with the above investigation.

"Mr. H. Zinder, Chief of the Division of Rates and Research, will be in the field and in the vicinity of Kansas

City the week of July 28. In view of this fact, Mr. Zinder has been requested to call upon you Saturday morning, August 2, on his arrival in Kansas City and arrange for a meeting with you to discuss this matter. It would be advisable if Mr. Biddison could be present at such a meeting, so that questions or procedure on the inspection, number of inspections contemplated, and the plans generally, may be discussed. Following this conference and Mr. Zinder's report, a decision will be reached concerning the nature and extent of the Commission's participation in the inspection.

"In view of the above circumstances, it is suggested that arrangements for the commencement of the inspection be delayed from August 4 until August 18. This would permit Mr. Zinder time to return to Washington and to make [fol. 3646] whatever arrangements are necessary for some members of the staff to reach Kansas City for the start of the inspection.

"If the above arrangements are satisfactory, please confirm them by return wire.

Yours very truly,"

(Signed) LEON M. FUQUAY,
Secretary."

I have also here a carbon copy of a telegram:

from "Kansas City, Missouri,
July 28, 1941,
3:55 P. M."

Leon M. Fuquay, Secretary
Federal Power Commission
Washington D. C.

"Arrangements suggested in your letter of the twenty-sixth satisfactory. Will be glad to see Mister Zinder Saturday morning August, second.

(Signed) PANHANDLE EASTERN
PIPE LINE COMPANY

By G. J. Neuner, Vice President."

That is also subject to counsel's check.

By Mr. Wheat:

Q. Now, Mr. Biddison, as a result of the passage of letters between the company and the Federal Power Com-

mission, was a conference held in Kansas City with Mr. Zinder present?

A. Yes, sir.

[fol. 3647] Q. When was that held?

A. On August 2nd.

Q. Who was present there, so far as you can remember?

A. Mr. Seumer, Vice President of Panhandle Eastern Pipe Line Company, Mr. Glenn Clark, attorney for Panhandle Eastern Pipe Line Company.

I believe Mr. Don Culton, counsel for Panhandle Eastern Pipe Line Company in this case, was present at that meeting.

I was present, and Mr. Zinder and Mr. McAllister of the Federal Power Commission were present.

Q. Members of that Commission's staff?

A. Yes, sir.

Q. Now, will you relate briefly your recollection of what was said with respect to the inspection in question?

A. I outlined about the number of inspections that I anticipated making and I had a map somewhat similar to the map that hangs on the wall.

Q. Exhibit 15?

A. Exhibit 15 in this case, on which, on the main line system, I had indicated, generally, the locations of some of the points at which I wished to make inspection.

I explained that I was making provision for that number of inspections which I thought it would be desirable to make of such a property in case of a purchase and sale and did not propose a large number of test holes.

[fol. 3648] I advised that I had indicated, generally, certain locations upon this map and suggested that it would be advisable for representatives of the Federal Power Commission make additional locations equal to half the locations which I had selected.

They asked for a copy—

Q. (Interposing) When you say "they," who do you mean?

A. Mr. Zinder and Mr. McAllister. Which one made the request specifically, I do not know. It was sort of a joint request that they be furnished with a copy of that map and

that the matter of locating such additional test holes would then be referred to engineering numbers of the staff of the Federal Power Commission.

Q. Mr. Biddison, right there, did they express any dissatisfaction with the number of test holes that you proposed?

A. On the contrary, both Mr. McAllister and Mr. Zinder expressed satisfaction with our viewpoint that a large number of such inspections was not necessary for the determination of the facts pertinent to this kind of an investigation.

Q. For adequate sampling of the property?

A. That is right.

.

Mr. Gorman: Do you, by your answer, intend to indicate they [they] thought that was a sufficient number and [fol. 3649] sufficient for determining depreciation in the property?

The Witness: I am not trying to indicate anything. I am simply telling what happened.

Mr. Gorman: Yes. I did not want any improper inference to be given to your statement.

Mr. Wheat: I am sure no improper inference could be drawn from the statement of the witness.

By Mr. Wheat:

Q. Was anything else said about the number of test holes?

A. Yes. A comparison was made during that discussion as to our viewpoint on that matter in the light of the large number of holes either dug or planned to be dug by some other natural gas utility having cases pending or undergoing hearing before the Commission.

Q. What was said in that connection?

.

In your answer, Mr. Biddison, you said "in view of that matter." By "that matter," you meant what?

The Witness. Our view as to the matter of how many test holes were to be dug during this inspection.

By Mr. Wheat:

Q. What was said in connection with this item you just mentioned, some other company having too many test holes?

[fol. 3650] A. I cannot make a quotation on that, although I can say in regard to what was said on the matter, the idea was expressed by these gentlemen that we had adopted a logical procedure in that matter.

Q. Now, you also, did you, acceded to the request made by the Commission through its secretary that you postpone the start of this investigation from around August 8 to August 17 or 18? Is that so?

A. That is correct.

Q. In the meantime, Mr. Biddison, did you send on to Mr. Zinder or Mr. McAllister in Washington this copy of this map you have mentioned and also a list of the points where you proposed to dig test holes?

A. I arranged for that map to be sent. I did not send it myself.

Q. Well, it was sent, was it not?

A. I am sure it was. Later information indicated that it had been properly received.

Q. Now, did anyone representing the Commission at any time actually suggest to you any additional places for making test holes?

A. No, sir.

Q. And did you, yourself, on your own volition increase the number of test holes by around 50 percent?

A. I did at a later date and after conference with Mr. [fol. 3651] Shattuck and Mr. Badner, after their arrival at Kansas City.

Q. When did they arrive in Kansas City?

A. I do not have a record of that with me.

Q. Sometime after the 2nd of August?

A. I think I can give an approximate date on that. I think it was about August 4.

Q. At any rate, it was after this conference of August 2nd, was it not?

A. Yes, sir.

Q. And prior to your start on August 17 from Amarillo?

A. Yes. It may have been later than the date I have given.

Q. Did you request either of these gentlemen to make a designation of additional test holes?

A. I did.

Q. And are we to understand that they did not do so?

A. They did not do so.

Q. Now, as a result of that, did you make these additional designations?

A. I did and, in doing so, I marked them upon a map from which the station and plus number could be identified in the presence of Mr. Shattuck and Mr. Bodner.

Q. You mean, you marked them on the map in the presence of those gentlemen?

A. Yes, sir.

[fol. 3655] P. McDONALD BIDDISON a witness, having been previously sworn, resumed the stand and testified further as follows:

Redirect Examination (Continued)

By Mr. Wheat:

Q. Mr. Biddison, at the close of the hearing yesterday, you were discussing the program which you had developed for the examination of the pipe lines of the Panhandle Eastern Pipe Line Company in conjunction with certain members of the staff of the Federal Power Commission.

Now, I wish you would proceed with your discussion of what you did and particularly with respect to the digging of various test holes for the examination of the line and its condition.

A. When it developed that the engineers for the Federal Power Commission, Mr. Shattuck and Mr. Bodner, would not select additional locations for inspection on lines above the number which I had already located, I myself made the additional locations in their presence.

Q. How did you go about doing that?

A. I generally divided the districts, between locations which I had already selected, into substantially equal dis-

tances and put these locations as intermediate locations:

[fol. 3656] Q. Where did you put them?

A. Intermediate locations between the locations which I had previously selected.

Q. When you say you put them, did you put them on a map or something like that?

A. I marked them on a map and marked them according to its location and plus number on the alignment sheets.

Q. This you say was done in the presence of the members of the Federal Power Commission staff?

A. Yes, sir.

Q. I wish you would state, in general, what the basis was for your designation of test holes and their locations?

A. The basis was to have a fairly uniform distribution of test holes so selected that they could be reached by automobile, in order to save time.

For that reason, the locations were made close to what appeared to be roads that could be traveled by automobile.

Q. And after you had made these locations upon this map, how was the actual mechanism of getting the test holes dug arranged?

A. An assistant tabulated these locations by pipe line districts and furnished the information to the superintendent of pipe lines, who, by letter, advised district superintendents of the location of these test holes, of the length of pipe to be uncovered, of the clearance to be provided [fol. 3657] around the pipe, of the amount of protective coating that was to be removed, and of the probable date at which they might expect us to require the holes to be ready.

Q. Was there any effort on your part or, so far as you know, on the part of anyone connected with Panhandle Eastern Pipe Line Company, to make any selection of test hole points other than as you have testified?

A. No, sir, nobody else had anything to do with it.

Q. And you made your selections solely from the map as you have testified?

A. Yes, sir.

Now, my instructions to the pipe line department were that in case any of these locations proved to be such that it would interfere with land owners' rights of property, that

they could be moved a reasonable distance without placing a specific limit on what was reasonable.

There were a few locations changed for that reason. I think one was changed because the digging would have been in very hard rock, and one or two were changed to get them out of crop locations into open field locations, but the locations were made as originally specified, with very few exceptions.

Q. Now, some questions were asked you on cross-examination with respect to the locations for inspection which you designated at certain of the river crossings.

I believe you testified that, in those instances, you inspected pipe in some portion of the flood plain of the river at the crossing.

A. That is correct.

Q. Would it be your opinion that if there were corrosion or other deterioration of the pipe, that an examination of the pipe in such location would disclose such corrosion?

A. Yes.

Q. And would it be your opinion that if there were any corrosion in connection with the pipe in the river crossing, that an examination in the area of the river's flood plain would be the best possible place to make the examination for corrosion?

A. Yes, sir, there is more pipe, in general, on the land sections in the flood plain on these stream crossings than there is in these stream beds.

That is not true of all stream crossings, but it is of a number of them.

Q. Now, Mr. Biddison, you were also asked on cross-examination whether you made specific examination of the pipe at certain of the river crossings. It is a fact, is it not, that you arranged your examination to make inspection at certain of the river crossings, but not at all of them?

A. That is correct.

Q. Now, is it your opinion that your examination of the pipe at those certain river crossings was sufficient to give [fol. 3659] you a reasonable and fair basis for judgment as to the river crossing pipe of this company?

Q. And where is that conclusion contained in your testimony?

A. It is contained in the deductions I have made for depreciation in Exhibits 62 and 69.

Now, will you go back, Mr. Biddison, to the time of your [fol. 3660] conference in Kansas City, at which time you made the selections of these additional locations for test holes on the map in the presence of these two members of the Federal Power Commission's staff.

What was the next step in connection with this inspection trek?

A. After completing the locations, the next step was to notify the pipe line department of those locations so they could have these holes dug.

Q. Now, about when was that done?

A. I do not have copies of the correspondence on that.

Q. I am not asking that detail, but about when was it done in relation to these conferences and the start of your trip?

A. Well, it was done within two days after the locations had been posted on the maps, and I believe prior to August 10.

I think it was sometime during the week of August 3 that notification was given to the pipe line department, to my best recollection.

Q. Yes. Now, then, what was the next step?

A. The next step was to go to Amarillo and to start inspections.

Q. Did you drive from Kansas City to Amarillo?

A. No, sir, I took the night plane from Kansas City to [fol. 3661] Amarillo and got in Amarillo about 3:30 or something of that sort in the morning and met the representatives of the Federal Power Commission in the lobby of the Herring Hotel about 6:00 o'clock on Sunday morning.

Q. That was August 17?

A. Yes, sir, and we began inspection that day in the Panhandle Field.

Q. And what did you do there?

A. We drove in automobiles to the locations in the field where I had selected spots for inspection. We had a field superintendent with us to direct us to these locations. At each location, I went down into the hole, made the inspection of the pipe, its full circumference—

Q. (Interposing) What did you do in making this inspection?

A. That is what I am trying to tell you.

Q. Let's have this in detail so the record will show just exactly what was done by you and the representatives of the Federal Power Commission.

A. I made an inspection of the pipe for its full circumference and I made an inspection of the protective coating on that pipe in each of these locations, it had been directed that there be six feet of total pipe exposed of which four feet was to be cleaned of its protective coating so that four feet of the pipe surface could be examined and two feet of [fol. 3662] the protective coating could be examined.

Q. Proceed.

A. Now, at these locations, with a few exceptions, I made photographs of the pipe.

Q. We will come to that later, but I am glad to have you state what you did in that connection.

A. At each location, I made notations of my observations, and I have before me the forms on which those notations were placed at the time.

[fol. 3663] Q. In other words, had the paint been removed from four feet of that six feet that had been laid bare by the digging away of the earth from the pipe?

A. That is correct.

Q. All right, proceed.

A. The inspection was by P. McDonald Biddison.

Q. Was anybody else there at the time who looked at that pipe? A. Yes, sir.

Q. Who was there?

A. Representatives of the Federal Power Commission, Mr. Shattuck and Mr. Bodner.

Now, in general, Mr. Bodner made the actual inspections of pipe and Mr. Shattuck made the notations di-

rected by Mr. Bodner to be made. In other words, Mr. Shattuck generally kept the records and Mr. Bodner generally made the direct inspections of the pipe.

[fol. 3664] Q. Now, Mr. Biddison, before you proceed in connection with this photograph, did you take photographs at all or practically all of these test hole locations?

A. I did. There were one or two locations where I did not attempt to take pictures because of darkness, but, except for that, I attempted to take pictures at each location and I do have such pictures, with a few exceptions. I did not have a perfect score on it, but a pretty good batting average.

[fol. 3666] Q. All right. Now, how many inspections did you make of the pipe of this company? A. 116.

Mr. Littman: May I inquire if that represents the total number of inspections made by you on all types and kinds of pipe?

Mr. Wheat: That is what I meant by my question. I wanted that answer.

The Witness: Yes, sir.

By Mr. Wheat:

Q. How many was that? A. 116.

[fol. 3667] Q. Were the representatives of the Federal Power Commission staff present at all of your inspections?

A. Yes, sir, at every one.

Q. Did they also make notations, to your knowledge, at each one of these locations? A. Yes, sir.

Q. Did either one of them actually inspect the pipe at those locations?

A. Yes, sir, there was an inspection made by one or the other, or both, at every location.

Q. One acted as inspector and the other as secretary, is that true?

A. That was the general rule. As the general rule, Mr. Bodner made the inspections and, as a general rule, Mr. Shattuck made the record. In some locations, how- [fol. 3668] ever, Mr. Shattuck also made some inspections, and at each location they took soil samples.

[fol. 3669] Mr. Littman: Will you please explain what you mean by the word "bond"? You said the bond was good.

The Witness: The attachment of the coating to the pipe [fol. 3670] surface is referred to as the bond. If it adheres tightly, the bond is good. If this paint simply lays on the pipe without adhering, there is no bond.

In this location, there was definite surface rust with shallow attack on the metal about one pit per square foot but the depth of pits was not measurable.

[fol. 3671] Mr. Littman: What did you term each of these two situations, Mr. Biddison? Didn't you term one shallow surface attack and the other you referred to that [fol. 3672] as pits or pitting? I would like to be sure about it.

The Witness: On this particular observation, I have noted both, that there was definite surface rust and that there was shallow metal attack.

Mr. Littman: And inasmuch as there were no measurable pits, you did not use the classification of "pitting", did you?

[fol. 3673] By Mr. Wheat:

Q. Now, Mr. Biddison, I don't want to ask you to read each one of these, of course, but I would like to have you go forward with your explanation of what you and the representatives of the Federal Power Commission's staff that you mentioned did on this joint inspection trip that you took?

A. I cannot tell you anything about what they recorded because I do not know what they recorded at any location.

Q. I am not asking you that, Mr. Biddison, but what they did and what you did.

A. As an example of a location where pitting was found, I will refer to test hole No. 3 on Line A1101 at Station 20 plus 00, this being in Moore County, Texas, in Section 1, Block B12 of the D. R. Railway Survey.

[fol. 3674] In this location, [was] was standard, we had six feet of the line uncovered, of which four feet was bared and two feet of paint showed.

My notation upon this location shows that the general topography was rolling, the immediate location was high. I made no notation as to drainage. The soil was red, sandy clay loam, vegetation was pasture. The rainfall was solid.

The coating was pitted. There was no cracking or checking of the coating. Its physical condition was normal. It was very pliable, its bond was good. There was no evidence of corrosion and there was shallow pitting all back and the pipe was pitted. I recorded that the deepest pit on one of the four feet of pipe which had been bared was 40 mils, that the deepest pit upon the next one foot out of the four feet was 10 mils, that the deepest pit on [the] the next one foot of the four one-foot sections was 60 mils, that the deepest pit out of the last foot of the four foot section was 10 mils and that is typical of the notations which I made with regard to pits. That is, where pits were found, the four foot section of bare pipe was divided off into one foot lengths and a determination made of what was the deepest pit on each one foot of those four one foot sections.

Now, I know that the engineers of the Federal Power Commission recorded additional data as to the location of pits around the circumference of the pipe and recorded on each one foot not only the deepest pits but additional [fol. 3675] pits, but as to what their records were on that, I have no knowledge, never having seen any of their records.

Q. Well, you mean to say that never made available to you the records which they took on their joint inspection trip in the manner that you made available your record of what you took?

A. That is right, and I did not ask them for it either.

Q. At any rate, you have never seen it?

A. That is correct.

Q. They never offered to show it? A. No, sir.

Mr. Lattiman: He said he never asked for it.

Mr. Wheat: I did not ask that. I asked if they ever offered it to him.

Mr. Lattiman: He said he did not ask for it.

Mr. Wheat: I asked if they ever offered it to him.

Mr. Wheat:

Q. How did the Commission's representatives behave in this Court building?

Mr. Lattiman: I object to that.

Now if Mr. Wheat is going to start wagging out what had passed inferences as I think he appears to be wagging out of their thing, I would like to ask that a halt be called to it. It is very much like asking a man, when they are only looking around, what?

Mr. Wheat: Now all of those negative inferences that are sought to be drawn from this thing are highly improper.

Mr. Wheat: I did not ask anything but the facts.

Mr. Lattiman: For instance, questions were put to the representatives of the Federal Power Commission even object to this and ask you not to do that. We will never get through with this proceeding if we are going to indulge in these kind of inferences. They have no probative weight. What the Commission's representatives did and did not do would certainly have no reflection one way or another on what this witness did.

It seems to me that we are getting into a realm of wild speculation.

Mr. Wheat: Mr. Examiner, had counsel for the Commission not sought to draw such inferences in his cross-examination and had he not asked the witness questions with respect to these representatives of the Federal Power Commission who went with Mr. Biddison on this joint

inspection, I should, of course, not be asking these questions.

I may say that I have here before me three certain questions which I have written down and which I propose to ask and in connection with this objection I should like to read these questions so that Mr. Littman may be [fol. 3677] informed precisely what I expect to ask.

I believe in connection with his cross-examination that I have a complete and unqualified right to ask these questions. They are as follows:

Did these Federal Power Commission representatives or either of them object to any of the inspection locations where you and they actually inspected this company's pipe line?

Did they or either of them express disapproval of any such location?

Did they or either of them request an opportunity to inspect the pipe in question at any location other than those where the test holes had been dug?

Were they or either of them refused any such opportunity?

Mr. Littman: As to the first two, of course those are highly irrelevant. What difference does it make? If Mr. Biddison wanted to run along the pipe line and fly a kite, that was all right with us. We did not care what he did do or did not do. Whether or not we objected to what Mr. Biddison was doing, would not have any relevance to this proceeding.

Now, if they want to draw inferences from the fact we went along with Mr. Biddison on these inspections and did not object to what he did and say that we, therefore, approved everything Mr. Biddison did, well, that is a new kind of sophistry.

[fol. 3678] Trial Examiner: The Trial Examiner is constrained to interpret these questions which Mr. Wheat has just read as containing no innuendo and will permit them to be asked.

Mr. Wheat: That is correct, there is no innuendo intended. We are merely trying to get at the facts of this inspection.

Trial Examiner: I am of the same mind as to the inquiry made by Commission counsel in cross-examination.

By Mr. Wheat:

Q. Now, Mr. Biddison, did these two Commission representatives or either of them object to any of the inspection locations [were] you and they actually inspected this company's pipe?

Mr. Littman: Object.

Trial Examiner: Overruled.

The Witness: They did not to me and I know of no other place where any objection was registered.

Mr. Littman: Note an exception.

By Mr. Wheat:

Q. Did they or either of them express disapproval of the selection of any such location?

Mr. Littman: Object. He said they did not express any approval either. We are wasting a lot of time here.

Mr. Wheat: Mr. Examiner, it seems to me this objection is futile in view of your ruling. I have already read these questions and you have ruled upon them.

[fol. 3679] Trial Examiner: He may answer.

Mr. Wheat: Why can't Mr. Littman's objections go to them all?

The Witness: They did not to me and I do not know of them having done so to anybody else.

Mr. Littman: Exception.

Trial Examiner: Note an exception.

By Mr. Wheat:

Q. Did they or either of them request an opportunity to inspect the pipe at any location other than where these test holes that you testified had been dug?

Mr. Littman: Object. He has answered that question at least five times to my knowledge.

Trial Examiner: Overruled.

The Witness: Not to me and I do not know of them having made a request to anybody else.

Mr. Littman: We certainly acknowledge and concede that no request was made.

By Mr. Wheat:

Q. And did these representatives of the Federal Power Commission who accompanied you upon this joint inspection trip or did either of them request that any additional test holes be dug at any point along the line?

Mr. Littman: Object.

The Witness: They made no such request of me and I do not know of such a request having been made to any [fol. 3680] one else.

Mr. Littman: Exception.

.

[fol. 3684] Mr. Littman: I would like to have Mr. Bid-
dison tell us the inspections at which Mr. McIlhattan was
present? Was he present with you at all of the in-
spection points?

Mr. Wheat: Yes, tell us about that.

The Witness: It is possible he might have been absent
at one or two, but I think [we] was present at every in-
spection.

Mr. Littman: You have not told us what he did. Would
you mind if he would tell us what Mr. McIlhattan did?

Mr. Wheat: No, that is fine.

Mr. Littman: I thought you wanted to get a complete
picture.

The Witness: He conducted me over the pipe line and
mostly drove the car.

Mr. Littman: Did he make any inspections in the line?

[fol. 3685] The Witness: Not all of them; some of them
he did. I have no record of how many he was in but he
did inspect in some of the holes and some he did not.

Mr. Culton: The cathodic protection equipment is under his jurisdiction, is it not?

The Witness: Yes, sir.

Mr. Culton: So it was of importance to him to know what the condition of the pipe line was aside from any connection with the rate case?

The Witness: That is correct.

By Mr. Wheat:

[fol. 3715] The Witness: I want to explain, with regard to this picture, that it is a flashlight picture, and not much of a picture.

Mr. Littman: Mr. Biddison, have you identified that picture as the one that was taken at the river crossing?

The Witness: Maybe I should have given it a little further identification.

Mr. Littman: Yes, and try to tie it in with the cross-examination.

The Witness: This picture is the one taken at night, and is the one about which Mr. Littman questioned me during my cross-examination.

Mr. Littman: Which river crossing was that?

The Witness: On the Missouri River crossing, east side.
[fol. 3716] on the new line, Line 200.

Mr. Littman: That is on the loop line?

The Witness: Yes.

[fol. 3762] P. McDONALD BIDDISON, a witness, having been previously sworn, resumed the stand and testified further as follows:

[fol. 3780] Mr. Littman: Mr. Examiner, you will recall that during the course of redirect-examination of Mr. Bid-

[fol. 3781] dison, Mr. Biddison stated, in response to inquiry by counsel for Panhandle Eastern, that his estimate of going concern value was not necessarily reproduction cost.

Of course, the record will show exactly what he did say. It is my understanding that Mr. Biddison's position is that his estimate of going concern value is not reproduction cost.

Mr. Wheat: I think you will find, Mr. Littman, that he did not say what you say he said, but that he did say that cost of carrying unused capacity in this pipe line as determined factually by Mr. Morton and as those figures were finally used by him, Mr. Biddison, was not referable solely to reproduction costs.

Mr. Littman: And I believe he also testified to the same effect with respect to an amount of \$553,992.48 which appears on Page 966 of Exhibit 39 entitled, "Total Payments to Utility Companies."

Your Honor will recall that we have objected to Exhibit 39 in its entirety, and to Exhibit 62 in its entirety, on the ground that all of the figures shown therein represented this witness' estimate of reproduction cost new and reproduction cost new less depreciation.

As a matter of fact, in Exhibit 39, the heading, "Reproduction Cost New" appears throughout and, in Exhibit 62, particularly in the general summary on Page 2, Column B is headed, "Reproduction Cost—New", Column C is headed, "Deduct for Depreciation" and Column D is [fol. 3782] headed, "Present Value", and at the foot of that page, the title appears, "Total Plant, Property, Business."

Now these items of going concern value appeared under those headings, both new and both as to present values, and I asked Mr. Biddison at one point in this record whether or not the term "Present value" was, in his opinion, synonymous with reproduction cost new less depreciation and he stated it was.

Well, at any rate, that was the basis of our objection to these going concern value figures was that they were re-

production costs. Since this witness has taken the position and has stated upon this record that his estimate of going concern value is not necessarily reproduction cost, we would like to, at this time, withdraw our objection, which objection was based upon the fact that it was reproduction cost, we would like to withdraw our objection to Page 966 of Exhibit 39, and we would like to withdraw our objection, which was made on the same basis, to corrected Page 965 of Exhibit 39-A.

Your Honor will recall that Page 965 originally appeared in Exhibit 39 but it was corrected and presented as Corrected Page 954 of Exhibit 39-A.

Now, the titles of those pages are as follows, the title of Page 966 of Exhibit 39 is "Panhandle Eastern Pipe Line Company and Subsidiary Companies Cost of Business Development."

[fol. 3783] The title of Corrected Page 965 of Exhibit 39-A is, "Panhandle Eastern Pipe Line Company and Subsidiary Companies Values of Gas Purchase Contracts."

We would like to withdraw our objection to those two pages which objection, as heretofore stated, was based upon the fact that we considered that the figures contained thereon represented reproduction cost, and we also wish to withdraw our objection made on the same ground to the testimony given by this witness in direct examination with respect to those two pages.

We would like to have it distinctly understood that we are reserving our right to object to this testimony and to these two pages and the estimates contained thereon on any other ground and, of course, if it should develop on cross-examination that these figures are, in truth and in fact, referable to reproduction cost, we, of course, reserve our right to renew our objection on that ground.

In short, Mr. Examiner, we wish to cross-examine this witness on this subject and we think perhaps the best way to handle it would be to have these two pages copied into the record at this point, so that reference may be made in cross-examination to the figures shown thereon.

Trial Examiner: Disregarding for the sake of correctness any technicalities, I construe your statement just made to be that you desire now to have read into the recorded Corrected Page 965. of excluded Exhibit 39-A as well as the original Page 966 of excluded Exhibit 39 [fol. 3784] and, if that is not permitted, you are, in effect, saying to counsel for Panhandle Eastern that you make no objection to their offering those pages which you have specified as exhibits.

Mr. Pittman: The latter is correct, except that we reserve our right, of course, to object for any further ground.

Trial Examiner: On some other ground, yes.

Mr. Wheat: We have already offered these pages, among others, and do not deem it incumbent upon us to reoffer them.

Of course, they are offered in this record, Mr. Examiner. They have been offered several times and we believe erroneously excluded, along with other pages which we believe were erroneously excluded.

Trial Examiner: There is no modification of the ruling heretofore made which includes, in toto, the exhibits referred to.

Mr. Wheat: May we have an exception to that ruling, too?

Trial Examiner: Certainly. If they are to be brought into the record, I assume that it might be by counsel for Panhandle and as to whether they might be brought in by counsel for the Commission, there might be discussion. At least, I should want the matter discussed if there is objection on the part of Panhandle Eastern counsel.

Mr. Wheat: I just want to say that the record is perfectly clear not only in the direct testimony of the witness as to the amounts in question but in his redirect testimony [fol. 3785] in connection with the nature of those figures. Counsel for the Commission having neglected to cross-examine him thereon, the record is perfectly clear as to the nature of the figures, and as to whether or not they are referable solely to reproduction cost, we deem it entirely incumbent on counsel for the Commission to make his election as to how he wishes to proceed in this matter.

We believe the record is clear.

Trial Examiner: You have no objection to his request that these pages be copied into the record at this point and that he cross-examine upon them?

Mr. Wheat: Not at all, your Honor. We have offered them for all purposes and they are in our offered exhibits.

Trial Examiner: Very well. The reporter will at this point copy into the record Page 966 from excluded Exhibit 39 and, following that, Corrected Page 965 from the correction sheets offered at Exhibit 39-A.

Corrected (Page) 965

Ranhandle Eastern Pipe Line Company And Subsidiary
Companies

Value Of Gas Purchase Contracts

Line No.	Item (A)	Purchase Price (B)
1	J. M. Huber Corporation	\$.035
2	King Oil Company	.025

(fol. 3786)

Line No.	Item (A)	Purchase Price (B)
3	Navajo Production Company	.035
4	Northern Natural Gas Company	.035
5	Shamrock Oil and Gas Company	.035 to 1941
6		.035625
		4942 to
		1951

Line No.	Year	Purchases M. C. F. (B)	Cost at Contract Price (C)	Value at 4-1-24 (D)	Difference (E)
12	1939	14 862 264	\$ 517 454	668 802	
13	1940	16 427 962	571 248	739 258	
14	1941	20 376 400	707 850	916 938	\$ 209 088
15	1942	22 365 000	786 772	1 003 425	219 653
16	1943	23 090 400	812 352	1 039 068	226 716
17	1944	22 544 500	793 124	1 014 502	221 378
18	1945	23 964 000	843 075	1 078 380	235 305
19	1946	18 738 000	660 165	843 210	183 045
20	1947	18 738 000	660 165	843 210	183 045
21	1948	18 726 000	659 865	842 670	182 805
22	1949	17 110 500	603 501	769 973	166 472
23	1950	15 505 000	547 387	697 725	150 338

{fol. 3757}

Line No.	Year (A)	Purchases M. C. F. (B)	Cost at Contract Price (C)	Value at 4-1/2% (D)	Difference (E)
24	1951	13 909 500	491 524	625 928	134 404
25	11 Yr.				
26	Totals	215 067 300	\$7 565 780	\$9 678 029	\$1 585 314
27	Total Value — Gas Purchase Contracts				\$1 585 914

Line No.		Present Value of Difference 7 % Interest (F)
14	1941	\$ 209 088
15	1942	205 288
16	1943	198 014
17	1944	180 711
18	1945	179 514
19	1946	130 511
20	1947	121 963
21	1948	113 851
22	1949	96 887
23	1950	81 769
24	1951	68 318
25	11 Yr.	
26	Totals	\$1 585 914
27	Total Value — Gas Purchase Contracts \$1 585 914	

{fol. 3788}

(Page) 966

Panhandle Eastern Pipe Line Company And Subsidiary Companies

Cost Of Business Development

Line No.	Item (A)	Amount (B)
1	Payments to Utility Companies	\$
2	Sharing expense of house-heating campaigns	
3	Bowling Green Gas Company, Bowling Green, Missouri	152 50
4	Citizens Gas Company, Hannibal, Missouri	651 00
5	Missouri Edison Company, Louisiana, Missouri	42 00
6	Missouri Power and Light Company, Jefferson City, Mo.	4 930 50
7	Missouri Utilities Company, Columbia, Missouri	1 314 00
8	Central Illinois Electric and Gas Company, Lincoln, Ill.	453 00

9	Central Illinois Light Company, Peoria, Illinois	16 674 00
10	Central Illinois Public Service Company, Springfield, Ill.	3 225 00
11	Illinois-Iowa Power and Light Co., Champaign, Illinois	5 688 00
12	Payments on account Contracts with Michigan Consolidated Gas Co. Detroit, Agents,	
13	Change-over, House-heating	371 076 00
14	Ann Arbor, Contract expense of Michigan Gas Trans. Corp.	12 875 58
15	Conversion of Appliances	14 723 20
16	House heating customers	1 154 88
[fol. 3789]		
Line No.	Item (A)	Amount (B)
17	Payments on account Contracts Michigan Gas Transmission Corp.	
18	Shanahan Group, Change-over costs	73 047 98
19	Public Service Co. of Indiana, Construction Cost	11 323 32
20	Shanahan Group (Huntington), Change-over cost	2 961 50
21	Central Indiana Gas Co. (Sterling Glass Co) Change-over Cost	1 116 50
22	Public Service Co. of Indiana (Ingersoll Steel Disc)	
23	Construction Cost	3 080 00
24	Ohio Gas Light and Coke Company, Napoleon, Ohio, Change-over Cost	875 49
25	Ohio Gas Light and Coke Company, Napoleon, Ohio,	
26	Change-over and advertising	4 672-75
27	Toledo Edison Co., Advertising and promotion expense	2 156 00
28	Kentucky Natural Gas Company	11 349 77
29	Kokomo Gas and Fuel Company (Continental Steel) Construction cost	10 449 51
30	Total — Payments to Utility Companies	553 902 48
31	Carrying Costs on that portion of plant idle pending	
32	development of business	5 500 000 00
33	Total — Cost Of Business Development	5 6 053 992 48

[fol. 3790] By Mr. Littman:

Q. Mr. Biddison, on Page 966 of Exhibit 39, which has been copied into the record, you show "Total-Cost of

Business Development" in the amount of \$6,053,992.48, do you not? A. Yes, sir.

Q. Is that your estimate of the cost of business development, so-called? A. Yes, sir.

Q. Now, that is made up of two items, is it not, namely, "Payments to Utility Companies" in the amount of \$553,992.48 and "Carrying Costs on that portion of plant idle pending development of business" in the amount of \$5,500,000.

A. That is correct. Those are two main subsidiaries. There is further subdivision of the item of "Payments to Utility Companies."

Q. Now, referring to payments to Utility Companies in the amount of \$553,992.48, do you know how this amount has been charged on the books of Panhandle Eastern Pipe Line Company and its subsidiaries?

.

[fol. 3791]. The Witness: In a general way I know that payments of this nature are included in the item, "Other Gas Sales and Purchase Contracts," which appears in an exhibit by Mr. Watkins beginning in the year 1931—

Trial Examiner: (Interposing)—What is the exhibit number, Mr. Biddison, and the page?

Mr. Gorman: Exhibit 52, isn't it, Mr. Biddison?

The Witness: Yes. (Continuing)—and showing various amounts for each year subsequent thereto up to and including June 30, 1941.

I do not know whether each item on Page 966 of my Exhibit 39 has been charged against that account, but that account in general represents items of this nature.

Trial Examiner: Will you read that answer?

(Whereupon, the last answer, as recorded, was read by the reporter.)

Trial Examiner: You are referring now to Lines 43 and 44 of Page 2, Exhibit 52, are you not?

The Witness: Yes, sir.

By Mr. Littman:

Q. Do you know, Mr. Biddison, whether the amount of \$365,334.99 which appears in Mr. Watkins' Exhibit 52, Page 2, Column M, Line 44, is included in the amount of \$553,992.48 shown on Page 966 of Exhibit 39 in Line 30? [fol. 3792] A. I do not actually know. I believe it to be:

Trial Examiner: You have no particular statement in your present position, Mr. Biddison, of the data included on Page 966, have you?

The Witness: No, that is all the data which I have on that matter.

By Mr. Littman:

Q. Where did you obtain the figures that are used to obtain the total of \$553,992.48 which you call "Payments to Utility Companies"?

A. Not having my work papers over here on Exhibit 39, I am not able to give you a direct reference on that. I obtained that from an officer of the Panhandle Eastern Pipe Line Company and I think I have stated on the record just which one it was.

I do not now recall whether I obtained that information from Mr. Watkins or whether I obtained that from Mr. Paxton.

Q. At all events, you did not make an examination of the books and records of the Panhandle Eastern Pipe Line Company and subsidiary companies yourself, did you?

A. I made some examinations for specific purposes, but I did not myself take this from the books of the company.

Q. Now, you have referred to some specific purposes. Do those specific purposes embrace any of the items shown on Page 966 of Exhibit 39?

[fol. 3793] A. No, sir.

Q. Well, what did you ask this officer of Panhandle Eastern to give you?

A. I asked for a statement of these payments made to utility companies for the purpose of developing sales.

Q. You say, "to these utility companies." Did you give that officer a list of these companies, or did you just

ask him for a list of payments made to any and all companies?

A. I asked for a list of the payments made to utility companies for the purpose of developing business and I was furnished that information. This is the listing.

Q. Now, did you ask for anything other than that which you have just explained? A. No, I think not.

Q. Would your working papers show how these amounts, these items which go to make up the total \$553,000-odd were charged on the books of the company?

A. No, sir, they would not.

Trial Examiner: For the convenience of counsel, it may be stated that the original testimony of Mr. Biddison with reference to Page 966 appears in the transcript at Page 555, continuing past Page 560. Do you wish to refer to that at this time, either counsel?

Mr. Littman: Yes. I have that before me.

By Mr. Littman:

[fol. 3794]. Q. I take it from your answers to my previous questions that you have no personal knowledge of these items that go to make up the "Total Payments to Utility Companies" in the amount of \$553,992.48?

A. That is right.

Q. Now, do I understand it to be your testimony that the amount which I have just named is the correct and proper amount to be included in a rate base for rate making purposes in this proceeding?

A. I think the items on Page 966 are proper to include in the rate base.

Q. How about the dollars on Page 966 that go to make up the total of the \$553,000?

A. I think the amount is a proper one to include as a portion of the rate base.

Q. Can you tell us how you can arrive at such a conclusion without knowing anything, of your own personal knowledge, with respect to those figures?

A. I don't think that is very complicated. They represent costs. I didn't incur them. And the amounts have been stated based upon information which was derived from sources in which I have full and complete confidence.

[fol. 3795] Q. Now, you say they represent costs. Do you know that of your own personal knowledge?

A. No, but they were stated to me to be costs by the sources from which I secured the information, and I have full and complete confidence in that source.

Q. Suppose this source had handed you a figure of \$1,000,000. Would you have included that amount in this exhibit as your estimate of one of the elements of the cost of business development?

A. If they had given me a statement that showed \$1,000,000 with the details showing where the money went, I certainly would have used it, yes.

Q. Did you get any details as to where the money went as to these expenditures of \$553,000?

A. I got the detail as shown on Page 966.

Q. Is that what you mean by "detail"?

A. That is exactly the detail to which I am referring and to which I testified.

Q. Suppose they handed you a figure of \$50,000,000 with this detail, would you have testified on this stand in this proceeding that this represented your estimate of the amount to be included for "Cost of business development"?

A. I don't think I would have been silly enough to consider a \$50,000,000 figure in this connection, no; but when somebody hands me a statement of costs incurred [fol. 3796] and states they do represent costs according to their records and they are from an officer of the company, I think I would use it.

Mr. Wheat: May I ask, Mr. Littman, are you questioning the validity of the amount shown as \$500,000? If you are, we will be glad to furnish you any detail about it.

Mr. Littman: We are challenging every dollar that is shown on this Page 966. We do not feel that it is our duty to make a case on behalf of Panhandle Eastern Pipe Line Company and subsidiary companies.

[fol. 3798] Q. Let's look at some of these details, to use your terminology, Mr. Biddison.

Here is a rather fat item in Line 13 on Page 966 in the amount of \$371,076 called "Payments on account Con-

tracts with Michigan Consolidated Gas Company, Detroit, agents, house heating."

Do you know when that amount was paid?

A. I know that payments were made on account of that contract over a period of years. I have read the contract between the Panhandle Eastern Pipe Line Company and the predecessor company of Michigan Consolidated Gas Company, in connection with the supplying of natural gas for Detroit by Panhandle Eastern Pipe Line Company.

I know that that contract provides for certain payments, some of these payments being based upon the number of house heating customers attached by the distribution company at Detroit.

I do not recall all the terms of it, but I have read those terms and know that such a provision exists in that contract.

Q. Now, will you answer my question, please, Mr. Biddison? A. I have done so.

Q. Will you give us the dates on which the payments were made, Mr. Biddison?

A. I will not, because I don't know them and have so stated.

[fol. 3799] Q. Do you know anything else about that item other than that which you have already stated?

A. That is the general information that I have in mind on that contract. There may be some additional details which I know about which I cannot now recall.

Q. You don't know how this amount was charged on the books of Panhandle Eastern Pipe Line Company, do you? A. I do not, and I have so stated previously.

Q. That answer goes for all the items that go to make up the \$553,000? A. Yes, sir.

Q. Can you state the names of the companies and individuals to whom this amount of \$371,076 was paid?

A. I cannot.

Q. Would it refresh your recollection if I were to state that approximately \$100,000 of that was paid to a gentleman by the name of Parrish? Would that refresh your recollection at all?

A. No. I recall that there was a payment made by somebody to a man by that name, but whether it is in this account or not, I don't know.

Q. Do you know who Mr. Parrish is?

A. I know of a Mr. Parrish who at one time organized the pipe line system which is now Panhandle Eastern Pipe Line Company.

[fol. 3800] Q. If the fact should be that a portion of this amount of \$553,992.48 had been charged on the books of the company as past operating expenses, would that make any difference in your so-called estimate of so-called "Cost of business development"?

A. No, it wouldn't make a bit of difference to me where they charge it. This is a statement of costs, and if it cost them that, it cost them that, regardless of how it was charged.

[fol. 3801] Q. Mr. Biddison, did you ask for any further detail than that which you show on Page 966?

A. No, I asked for information as to what payments had been made for the purpose of developing business. I knew that payments had been made. I knew that certain contracts for the sale of gas called for payments to be made, and I asked for that information to be furnished to me.

It was furnished to me and I took from the information which was furnished, the data which I wished to use, and that is what is shown on Page 966.

On the original tabulation from which I took this I think there was some additional information as to some of the dates, but I didn't copy that whole information that was available.

Trial Examiner: Do you have those original sheets furnished you in your work papers to which you referred?

The Witness: No, sir, I do not. I have in my work papers, as I recall it, only the data which I copied off from the statement which was available, and I believe [fol. 3802] that corresponds precisely to what is shown on Page 966.

At the lunch hour, I will secure the work papers on which Page 966 is based and either confirm the statement that nothing else is shown, or produce anything additional which I have. Whatever I do have, I have with me at the hotel.

By Mr. Littman:

Q. I don't suppose you can tell us whether any part of this amount of \$553,992 had been written off by the company in past years?

A. I think some parts of it had been. I so concluded from an examination of Exhibit No. 52.

Q. You are not prepared to state how much has been written off? A. No, sir, I am not.

Q. You are, however, of the opinion that \$365,334.99 of this amount of \$553,992.48 are "Payments to utility companies" yet remains in the book accounts of the company? That is your general impression, is it not?

A. It is, and I so concluded from an examination of Exhibit 52.

Q. Now, if that is the fact, and I think it might be the fact, would it be proper, Mr. Biddison, to add this amount of \$365,334.99 to the present book cost of the company which already includes that \$365,334.99? [fol. 3803] A. No, I don't think it would be proper to

throw in part of it and throw it all in again, certainly not.

Q. In other words, your Exhibit 69—I wish you would please turn to it—Page 2, Line 15, shows that that amount, to-wit \$365,334.99, is included on the books of the company as "Other gas sales and purchase contracts."

A. Yes, sir.

Q. Now, I believe you have testified that your going concern value of which "Payments to utility companies" forms a part, was not solely referable to reproduction costs. Is that correct?

A. Well, I have not said a word about "going concern value" in this case. I have not used that term.

Q. Well, your lawyer has. You don't think this is a part of going concern value?

A. I have not called it going concern value and I have strictly avoided the use of the term because I don't understand what anybody else means when they use it, and

I don't think anybody else would understand what I mean if I were to use it, so I have not used the term.

Q. You used the term "cost of business development."

A. Yes, sir, I did.

Q. And this item of \$553,000, of course, forms an integral part of that cost of business development?

A. That is correct.

[fol. 3804] Q. Now, no matter what you call it, if this Commission were to use book costs, for example, as a rate base, it would be improper, would it not, to include that \$365,344.99 twice? A. Why, certainly.

Q. So that this amount of \$553,992.48 of "Payments to utility companies" is, strictly speaking, referable to your reproduction cost, is it not, Mr. Biddison?

A. No, sir, it is not. It is referable to the determination of the rate base, no matter how it is determined.

Q. But it should go in once?

A. Once in each rate base only, that is absolutely correct.

Q. So that if book cost or original cost were used and the capitalized amount of \$365,334.99 were included in such rate base, there would be no necessity of including that part of your "Cost of business development" in the same amount again?

A. In the same amount is correct. I think the difference should be added.

Mr. Culton: Have you heretofore prepared an exhibit on that basis?

The Witness: I have.

Mr. Littman: On what basis?

Mr. Culton: If book cost were the remaining factor.

By Mr. Littman:

Q. Now, the difference—you don't know what the difference represents, do you, or how it was charged on the books of the company?

A. I don't know how it was charged on the books of the company, but you can readily ascertain the difference by a little subtraction of one from the other, or in the determination of the rate base you can deduct this amount of "Other gas sales and purchase contracts" in the amount of \$365,334.99, and in lieu thereof, add the cost \$553,992.48.

Mr. Culton: I will state, at a later date we shall present an exhibit prepared by Mr. Biddison, showing what the rate base would be on the assumption that book cost is appropriate, in which he had indicated the sum shown on the books as the item for "gas sales and purchase contracts" and from the plant account and he then added [fol. 3806] an aggregate covering the cost of business development and the value of gas purchase contracts.

Trial Examiner: That procedure, however, does not eliminate the \$553,992.48 which has been under discussion?

Mr. Culton: It does not. It does eliminate the \$365,000 and includes the \$500,000.

Trial Examiner: In other words, it simply avoids the duplication which apparently has been developed?

Mr. Culton: It does.

Mr. Littman: All of which, if I may remark on the record at this time, verifies my original objection to this so-called going concern value as being referable to their claimed reproduction cost. Let's get on [the] the next item.

By Mr. Littman:

Q. Mr. Biddison, the next item is in the amount of \$5,500,000 as shown on Page 966 of Exhibit 39 in Line 32, entitled, "Carrying costs on that portion of plant idle pending development of business."

And you obtained or derived the figure of five and a half million from a consideration of Mr. Morton's Exhibit 38, did you not? A. That is correct.

[fol. 3807] Q. Did you advise Mr. Morton how to prepare Exhibit 38?

A. I told Mr. Morton what I desired to develop and discussed with him methods by which it could be developed.

Q. Did you give him the five methods that he used which are shown on Page 2 of Mr. Morton's Exhibit 38?

A. I don't know whether these methods originated all with Mr. Morton or with me, or partly with Mr. Morton and partly with me.

We discussed various methods of developing this cost of carrying capacity while load developed, and in final analysis, after discussing the various methods, I was satisfied to develop the five methods which we used and so advised him.

Q. Before you requested Mr. Morton to work up his Exhibit 38, did you have any preconceived notion as to what the result would be? A. Not the slightest.

Q. If Mr. Morton's studies had shown the amount of interest, ad valorem taxes and operating expenses allegedly attributable to unused capacity to have been about \$2,000,000 instead of about five and a half million to six and a half million, how would that have affected your estimate? A. By just about that amount of money.

Q. In other words, your opinion has its roots and foundation in Exhibit 38? A. That is right.

[fol. 3808] Q. Now, which of the five methods of calculating interest, ad valorem taxes and operating expenses attributable to unused capacity, found by Mr. Morton, do you consider the best and most accurate?

A. I have no choice between them. As a matter of prediction one might make a choice, but for the estimate of something which did happen I think the matter should be tested by such logical methods as may be obtainable and, in the final analysis I have not selected any particular one of these methods as being my choice based upon the fact that they produce results not widely disproportionate, and I have adopted a figure which is not the high one, not the low one, not the intermediate one, and not the average.

Q. How did you arrive at the [\$5,500,00] figure from these different amounts which range from a low of \$5,115,567 to a high of \$6,680,062?

A. As a matter of judgment considering those high and low figures and the intermediate figures.

Q. You didn't add them up and divide by five, did you?

A. No, sir, I did not. I may have done that, but I didn't secure my answer in that fashion.

Q. How did you know that you should take \$5,500,000 rather than, let us say, \$5,250,000?

A. That is my judgment, that about \$5,500,000 is a logical conclusion of what that cost actually was, based upon these studies.

[fol. 3809] Q. Can you give us the mental process by which you derived \$5,500,000 from these figures which are in some instances about \$1,000,000 apart? I am curious as to how you did that.

A. In consideration of these figures which have been developed here, it is my estimate that \$5,500,000 is a fair estimate of the cost of carrying that capacity.

Q. Is there any doubt in your mind, Mr. Biddison, if you had ten engineers look at these five different figures varying more than \$1,000,000 in some instances, you would get ten different figures from that?

A. I suppose probably you would, but they would not be very far apart.

Q. All right. Are you familiar with the figures in Exhibit 38?

A. Well, I have examined the details going through there, but I am not familiar with the detail figures.

I have examined them at one time. The details were developed by Mr. Morton and he is the man who would have to explain the details, not me.

[fol. 3810] Q. Well, let's be a little more specific. This exhibit is predicated upon past interest, past ad valorem taxes and past operating expenses which Mr. Morton and you have concluded are attributable to unused capacity. Is that right? A. That is correct.

Q. Do you express an opinion that these amounts shown by Mr. Morton are in truth or in fact attributable to unused capacity, based upon your own personal knowledge?

A. Not based upon my personal knowledge, because I have no personal knowledge of what the operating costs were at that time.

I have not investigated what they were at that time.

Mr. Morton did make the investigation and he made the compilation.

Mr. Lee: May I ask a question now?

Mr. Littman: Certainly, Mr. Lee.

Mr. Lee: Did you make any effort to ascertain the history of the company during that period for the purpose of determining whether or not the failure to achieve the full use of capacity may have been due to the policies and the conduct of the company itself rather than the lack of markets?

The Witness: I made no investigation as to what methods the company had pursued during that period to attach business. I know that in any natural gas project there is a period of development during which there can be no expectancy of fair return upon the money invested.

[fol. 3811] A company of that nature is fortunate if in the first year their revenues are sufficient to pay their out-of-pocket expenditures. They are again fortunate if, in the second year, their revenues are enough that they can begin to set aside something to the depreciation reserve.

And, they are again fortunate if, at the end of the five-year period, they have developed load enough on a projected system that they may have some net earnings.

No system can be installed with a small pipe at a low investment and then expanded in diameter to meet the growing load.

It is inherent in the business that initial investments must be made to provide capacity far in excess of that initially required, and it is typical of the business that such a system once built requires in the neighborhood of five years to develop its load.

[fol. 3813] Mr. Lee: If I understand now, his answer is that he made no investigation of the history of the company during that period,—if I understand correctly, then I am satisfied. Is that your position?

The Witness: No, I have some knowledge of the history of the company during that period. I did not make

that investigation in connection with the compilation of this report.

Mr. Lee: Did you consider it in connection with the compilation of the report?

The Witness: Yes.

Mr. Lee: What weight did you give to it?

The Witness: I gave it this weight: I felt that the development of this project up to the capacity attained in the basic year, was substantially a normal development [fol. 3814] of that kind of a project.

[fol. 3816] The Witness: I predicate the use of this data upon the conclusion that no matter what had been the squabbles during the interim, that the development had followed a normal pattern of development. That is the beginning and the end of the consideration I gave to all those matters.

[fol. 3818] P. McDONALD BIDDISON, the witness testifying at the time of the noon recess, resumed the stand and testified further as follows:

Recross Examination (Continued)

By Mr. Littman:

Q. Mr. Biddison, at the close of the morning session, we were discussing Mr. Morton's Exhibit No. 38 and the conclusions which you drew from that exhibit.

I refer you to Exhibit 38, Page 1, Line 21, entitled, "Operating Expense—Partial" and ask you whether you can state the types and character of expenses that are included within the meaning of that term in the figures shown in Columns A, B, C, D and E?

A. No, I cannot give you a breakdown on those figures. They have been explained by the man who compiled them, Mr. Morton.

Q. And you are not able to state from your own knowledge what operating expenses are included in those columns?

A. No, because I did not do the job. Mr. Morton did the job.

Q. Did you tell Mr. Morton what types and kinds of expenses to include?

[fol. 3819] A. I told him to include those items that did not vary with the amount of gas sold and to exclude compressor station operation and exclude the production expenses. Now, beyond that, the job is Mr. Morton's.

Q. Did you have anything to do with the deductions from those amounts of operating expenses which are shown in Lines 23 and 24 and which are included, in part, in the figures shown on that line?

A. I had nothing to do with any of the figures on this page or the next one. The work was done by Mr. Morton.

Q. I take it by your answer that you are not familiar with the details of the figures which I just referred to?

A. That is correct. I reviewed the work during the course of its preparation, but I did not do the work and I am not thoroughly familiar with all of the details.

Q. Is the same true with respect to the interest charges which appear in Line 19 of Exhibit 38?

A. As I said before, it is true of every figure on this page and upon the next page.

Q. Now, Mr. Wheat asked you a question at Page 560 of the transcript—I will have to get a copy of it.

Trial Examiner: I have it right here, Mr. Littman.

(A document was handed Mr. Littman.)

By Mr. Littman:

Q. The question is as follows; and I might say that he was referring to the \$5,500,000 figure which you used [fol. 3820] and which you called "carrying costs on that portion of plant idle pending development of business."

"Question: And they represent real costs and actual money expended on the history of this plant rather than mere past losses?"

"Answer: That is correct and they represent value because they are costs which would be incurred in the reproduction of this property and they are costs which would be escaped by a purchaser who purchased the property with this business which has been attached by the expenditure of that money."

Did you make that answer to that question, Mr. Biddison?

A. I did.

Q. Now, when you made that answer to Mr. Wheat's question, you did not know of your own personal knowledge that these amounts represented costs, did you?

A. I know in this way, that I had a compilation made for me by an employee of Panhandle Eastern Pipe Line Company whose duty it was to determine what those costs had been and, on that basis, I referred to them as costs and believe them to be costs.

Q. Your knowledge is, of course, hearsay, is it not, with respect to these costs, so-called?

A. No, sir, it is not hearsay. It is a result of an investigation performed by an employee of Panhandle Eastern Pipe Line Company at my direction and reported to me by him.

[fol. 3821] Q. Do you know what he did? Do you know what he did?

A. I have the results of what he did before me.

Q. Do you know what he did?

A. Yes, he compiled Exhibit No. 38.

Q. Did he examine the vouchers and make an audit of these so-called costs?

A. I do not know exactly how much detail he went into.

Q. You do not know what he did at all except as it is reflected by Exhibit 38, do you?

A. I know what he did as reflected by Exhibit No. 38 and the working papers which support it.

Q. And further than that, you do not know, do you?

A. That is correct.

Q. Is the sum of \$5,500,000 the amount which you estimate would be incurred in the reproduction of the property and the business of Panhandle Eastern?

A. I estimate that that sum would be incurred in the reproduction of that property, yes, sir. Further than that, I believe it to be a fair estimate of the amount which was incurred in the development of the business.

Q. And when you use the term "cost", you are not referring to capital cost but you are referring to past operating expenses, past interest and past ad valorem taxes, are you not?

A. I am referring to costs of that nature, no matter how they were classified in accounting practice.

[fol. 3822] Q. Well, I want to make certain we understand what you mean when you use the word "cost", Mr. Biddison. It may not make much difference to you, but it may make some difference to others and I want to be sure we understand each other.

Mr. Culton: We think the answer is plain, Mr. Examiner, without that lecture.

By Mr. Littman:

Q. The term "Cost" as you have used it here in connection with Exhibit 38 refers to past operating expenses, past ad valorem taxes and past interest, does it not?

A. It includes some of those items, yes, sir, as costs. I have not included, and Mr. Morton did not include, any allowance whatever for one item which could be construed to be cost, and that would be the item of depreciation which occurred upon this property during this period.

At my direction, this estimate was limited to those costs which required the expenditure of moneys.

Q. Now, when you use the term "cost" here, you are not referring to amounts which have been capitalized by the company on its books, are you, Mr. Biddison?

A. No, sir, I have stated before I refer to what the costs were no matter whether capitalized or not capitalized and no matter how they were classified in accounting practice.

Q. In other words, you were not referring to the term "cost" as is defined in the Uniform System of Accounts prescribed for natural gas companies by the Federal Power Commission, were you?

A. Well, it may be cost as defined some places in there and it may not be as defined in other places.

Q. Would you mind answering my question, Mr. Biddison? What is the fact, if you know?

A. I have answered it to the best of my ability.

Q. I take it from your answers that you are using the term "cost" in the broad sense and not in the accounting sense. Perhaps that is the difficulty that I am having.

In other words, if I can convey to you what I have in mind; in a sense every expenditure is a cost in the broad sense, is it not?

A. Yes, sir.

Q. ~~And you are using the word "cost" as including out-of-pocket expenditures, is that correct?~~

A. That is correct. I have tried to say that several times.

Q. Well, you cannot make it too clear on the record for me, Mr. Biddison, even though it may seem to you a little repetitious.

Now, will you please turn to Page 965 of Exhibit 39-A. I believe you have testified that the value of gas purchase contracts is \$1,585,914, have you not?

A. Yes, sir.

[fol. 3824] Q. And you arrived at that conclusion from the figures and computations shown on Page 965 of Exhibit 39-A, have you not? A. Yes, sir.

Q. Does any part of the amount of \$1,585,914 represent actual cost or investment?

A. No, sir. There may have been some costs in connection with these contracts but the figures on Page 965 of Exhibit 39-A do not represent costs. They represent an estimate of value.

Q. Now, Mr. Biddison, is this figure of \$1,585,914 referable solely to reproduction cost?

A. No. It is simply an estimate of the value which I ascribe to the fact that Panhandle Eastern Pipe Line Company has those contracts in existence.

Q. Now, if book cost or original cost were used as the rate base in this proceeding, in your opinion, would it be proper to add the sum of \$1,585,914 to such rate base?

A. I think it would be proper to include this value in the rate base no matter how determined. Now, the wording of your question was a little bit confusing to me. I do not see how you can take book cost as the rate base and still talk about including something else in the rate base. I can conceive how you could take book cost as a portion of the rate base and include therewith other items that are proper to be included.

[fol. 3825] Q. Perhaps we might be a little more specific and make certain that we understand each other.

Please turn to Page 2 of Exhibit 69, which exhibit shows, in Column C, the purported book cost of Panhandle Eastern Pipe Line Company and subsidiary companies.

Now, in Lines 12 and 13, you show an amount in Column C and Column E, \$1,318,629.10 for "gas sales and purchase contracts" (less \$1,611,657.30 reserves), do you not?

A. Yes, sir.

Q. Now, the point I am driving at, Mr. Biddison, is if that figure of \$1,318,629.10 were included in a rate base as the book cost of gas sales and purchase contracts, obviously the amount of \$1,585,914, which you estimate to be the value of gas purchase contracts should not be added thereto, should it? A. Obviously.

Q. So that, obviously, this amount that you show on Page 965 of Exhibit 39-A in the amount of \$1,585,914 is not referable to book cost or original cost, is it?

A. No, and I have never intimated that it was.

Q. But it is referable to reproduction cost, is that correct?

A. It is referable to a rate base no matter how determined, whether through reproduction cost, book cost or just reaching out in the air for a figure. It is still referable to a rate base.

[fol. 3826] Q. Well, we are agreed, are we, that the two that I read to you should not be included in one rate base at any rate, are we not? A. Certainly.

Q. Now, is my understanding correct that in Column B, that is, the Column B that appears at the top of corrected Page 965, Exhibit 39-A, you show the present purchase price paid by Panhandle Eastern Pipe Line Company to the companies shown in Column A for gas purchased from those companies? A. Yes, sir.

Q. Now, let's look at Line 1, J. M. Huber Corporation. The price, according to this exhibit, is $3\frac{1}{2}$ cents per M. c. f., is it not? A. Yes, sir.

Q. Can you advise us whether that is a flat price or an average price or what kind of a price it is?

A. The price is $3\frac{1}{2}$ cents for the first ten years and thereafter, at five-year periods, adjustments are to be made to the weighted average price paid by pipe line

companies piping gas out of South Hutchinson County and North Carson County.

Q. When was that contract entered into?

A. The date on that contract is September 21, 1935.

Q. Then there remains only about four years of the first ten-year term, does there not?

[fol. 3827] A. That is right.

Q. Does that ten-year term run from the date of the contract or the date of the first delivery, do you know?

A. I do not know on that point.

Q. Now, you have included the purchases from J. M. Huber Corporation for how far into the future?

A. For 11 years.

Q. Will you explain how you arrived at the $3\frac{1}{2}$ cent price for the entire term of 11 years?

A. I simply used the $3\frac{1}{2}$ cent price without correction, therefor.

Q. Mr. Biddison, my recollection of your answer with respect to how that price was to be determined for the latter period has escaped me. Would you mind repeating that part for me?

A. After ten years, the adjustments are to be made to the weighted average price paid by pipe-line companies piping gas out of South Hutchinson County and North Carson County.

Q. Mr. Biddison, it is altogether probable, is it not, that four years hence, when those adjustments are to come into play, the price of $3\frac{1}{2}$ cents may change, may it not? A. Yes, sir.

Q. You took the $3\frac{1}{2}$ cent price and applied it to what volume of gas, Mr. Biddison?

A. The application of price is made to the volume estimated to be purchased under these contracts by Mr. Hinton and—

Q. (Interposing) Had you finished your answer, Mr. Biddison?

A. I am trying to find some more detail on this matter which I am having a little trouble locating.

Q. Very well. Perhaps you can read into the record the precise amounts of purchases for each of the years applicable to the J. M. Huber Corporation; if so, I would greatly appreciate it.

A. That is what I was looking for. There is a working sheet of mine that gives that detail. It is not in position where it belongs here.

[fol. 3829] By Mr. Littman:

Q. Have you been able to find the work sheet showing the amount of purchases to be made or the amount of purchases of gas to be purchased by Panhandle Eastern Pipe Line Company from J. M. Huber Corporation?

A. No, sir, I have not. It does not appear to be in the working papers which I have with me.

In this tabulation, I call attention to the fact that on Exhibit 39-A, Page 965, at the close of the year 1945, as indicated at Line 18, there is a material reduction in the amount of purchases under these contracts.

Q. You mean under all of the contracts? A. Yes, sir.

Mr. Culen: What is the reduction?

The Witness: The reduction amounts to about 5,226,000 M. c. f. per year. Now, it is my recollection that that is the point at which I dropped the purchases from the J. M. Huber Corporation in compiling that table. I will, however, check that matter and furnish a breakdown of the quantities in Column B.

By Mr. Littman:

[fol. 3830] Q. Very well. You will submit such a statement for the purchases under each of the contracts shown on Page 965 of Exhibit 39, will you not?

A. Yes, sir. It is my recollection that I dropped this contract at that time and I should have done so, and I believe I did. I will submit the detail in order to show completely what I did in that connection.

Q. And in connection with the rest of the contracts?

A. Yes, sir.

Q. Very well.

Now, the second contract that you have listed is that of the King Oil Company and you show that the price paid by Panhandle Eastern for gas purchased from that company is 2½ cents. Can you state the date of that contract, please?

A. I do not have the date on that contract. I have a memorandum as to the term.

Q. Will you give us the information that you have with respect to that contract?

A. The term is for as long as gas is produced in paying quantities.

Q. Is the price a flat price?

A. Yes, sir.

Q. Of 2½ cents for each and every M. c. f. produced?

A. Yes, sir.

Q. And can you state whether the purchases from the [fol. 3831] King Oil Company are included in each of the years shown on Page 965 of Exhibit 39-A down to and including 1951?

A. Yes, sir, they are.

Q. Will you give us the same information with respect to the third contract, namely, Navajo Production Company?

A. The contract is to be effective so long as it is profitable to the purchaser.

Q. Now, is that contract price a flat rate or is it an average, or what?

A. It is a flat rate, 3½ cents.

Q. Per M. c. f.?

A. Yes, sir.

Q. Now, what are the facts with respect to the next contract, Northern Natural Gas Company?

A. It is for a term of eight years. The contract was made September 27, 1935, and, therefore, runs to 1943.

Q. Have you then included any purchases after 1943 in your tabulation on Page 965?

A. No, sir.

Q. That leaves the fifth contract, namely, that of Shamrock Oil and Gas Company. Will you give us the same data with respect to that?

A. The price is 3½ cents, but at the expiration of the present contract for the supply to Detroit, if the price at Detroit is increased or decreased, the price of that gas shall be increased or decreased in the same percentage.

[fol. 3832] Mr. Lee: I take it you assumed a decrease on Detroit for that?

The Witness: I did not. The provision is effective as at the end of the existing Detroit contract and I had no reason to make any assumption in that regard.

By Mr. Littman:

Q. When does the Detroit contract expire, if you know?

A. About 15 years from sometime in 1936, I think is the fixed term of it but I do not know whether there be a definite or absolute termination date on it or not.

Q. Well, do the purchases shown in Column B include purchases from Shamrock Oil and Gas Company through each of the years shown, including 1951?

A. Yes, sir.

Q. Is my understanding correct, Mr. Biddison, that the theory of this exhibit is that Panhandle Eastern Pipe Line Company has certain contracts under which it purchases gas at a price below $4\frac{1}{2}$ cents per M. c. f.?

A. That is correct.

Q. And that in view of the fact that it has these advantageous contracts, there attaches thereto a certain [fol. 3833] value and you have computed the value?

A. That is correct.

Q. Now, the $4\frac{1}{2}$ cents per M. c. f. which you showed in Column D on corrected Page 965, Exhibit 39-A, represents what?

A. It represents the general field price for high pressure sweet gas at the wells.

Q. Where?

A. In the Panhandle Field of Texas.

Q. How did you arrive at that market value or present value of gas at the well head in the Panhandle Field?

A. From a general consideration of prices on gas of recent determination rather than from the old contracts made in the early days of the field.

Q. In other words, you determined that figure?

A. Yes.

Q. Without assistance from others?

A. I think I had assistance from others, yes, I had information from others on it.

Q. But it resulted from your own personal investigation of the market price, did it?

A. It is my determination.

Q. How many contracts did you consider in arriving at that market value?

A. I do not know. I have not made any recording of all the information which I used in that connection. I have [fol. 3834] participated recently in some negotiations in regard to piping of gas out of the Panhandle Field and, in that connection, gained some information as to the value of gas at the well head in the Panhandle Field.

Q. Can you be a little more specific about that? Can you give us an approximate number of contracts that you considered?

A. No; and I gave consideration to the fact that payments for royalties in the Panhandle Field are being continuously based upon higher and higher gas values whereas, at one time, those royalties were based upon a 2-cent well price.

They have been quite generally stepped up by the consent of the producing gas companies to higher and higher figures.

Q. Well, can you give us the names of some vendors whose sales you used as the basis of this so-called 4½ cent market price?

A. I gave consideration more to the basis on which royalties are now being paid than I did to any recently negotiated sales contracts.

In that connection, it is my recollection that royalty payments by Texoma Natural Gas Company are now on a 4½ cent basis and have been for some little time.

Q. Are you sure about that, Mr. Biddison?

A. That is my recollection of it.

Q. Can you name any other vendees or vendors, any [fol. 3835] other contracts or arrangements on which you can say that you based this 4½ cent field price?

A. I think I could, Mr. Littman, if I had a little time to refresh myself on this. Being called for cross-examination on something which had been ruled out and without the opportunity to refresh myself has handicapped me some.

I believe that Panhandle Eastern itself is now paying royalty in that field on a 4½ cent basis. That is my recollection of their base.

Q. Well, do I understand that you predicated this market price primarily upon a consideration of royalties paid?

A. Primarily because I do not know of recent contracts in any great quantity for purchase in that field.

Q. Will you please explain how royalties are determined in the field?

A. The royalty provision is generally one of one-eighth of the product.

Q. Of what price, Mr. Biddison?

A. One-eighth of the product and, in making that compensation, the compensation is generally made in cash at what is construed to be the value per unit of the amount of royalty gas or oil produced.

Now, in the case of natural gas in the early days in the Panhandle Field, those royalties were, in a great many cases, based upon a 2-cent well head price and as conservation measures, because effective, as the takes of gas became more equitably distributed among land owners and as an encouragement to prevent riotous over-drilling; the base for the payment of royalty was gradually stepped up and as markets increased, realizing that marketable gas had a higher value than gas which could not be disposed of, the general basis for the payment of royalties in the Panhandle Field has gradually increased until today I think that in the western Panhandle Field, 4½ cents at the well head for high-pressure sweet natural gas is a fair measure of its present well head value.

By Mr. Littman:

Q. I believe we were discussing, just before the recess, the matter of how you established the so-called market price of 4½ cents per M. c. f. You are not engaged in the business of buying and selling gas in the Panhandle Field, are you, Mr. Biddison? A. No, sir.

Q. You have never been so engaged, have you?

A. No, sir.

Q. Do you know what royalties are being paid by the five vendors shown on Page 965 of Exhibit 39-A to their lessors? A. No, I do not.

Q. Did you make detailed investigation of the royalties paid in the Texas Panhandle Field? A. I did not.

Q. Now, referring to Column B of Page 965, Exhibit 39-A, headed, "Purchases M. c. f.", will you briefly explain how you made the determination of those figures?

A. Those are the estimates made by Mr. Charles Hinton, production engineer of Panhandle Eastern Pipe Line Company, as to the amounts of such purchases for the respective periods.

Q. Do you know whether those amounts of purchases are predicated upon Mr. Morton's estimated future gas sales?

A. I do not know exactly how Mr. Hinton made those determinations. I secured this data from his working papers and it is his estimate of those sales, that is, sales by these companies, and purchases by Panhandle Eastern Pipe Line Company.

Q. I presume if there are any questions we would like to have answered with respect to those purchases shown in Column B, we should ask Mr. Hinton when he comes here for cross-examination? A. That is correct.

Q. I believe you alluded, Mr. Biddison, to the fact that the market price of gas in the Panhandle Field of Texas has been going up in recent years. Will you please briefly state the reason for that?

[fol. 3838] I believe you started to state some of the reasons. You mentioned, for instance, the fact that conservation laws had been passed and put in effect in the State of Texas, and, secondly, as I recall, the building of pipe lines such as Panhandle Eastern Pipe Line Company has built has created a market for gas.

Now, those things all have an effect, do they not, upon the market price at the well head, of gas in the Texas Panhandle Field? A. Yes.

Q. Isn't that a market that the gas consumer himself has created to a large extent?

A. No, I don't think the gas consumer has ever created any market any place. Somebody else created the market by getting some gas consumers attached.

Q. You don't think, then, that the use made by the burner tip users of gas in Detroit, for example, is having any effect upon the market price of this gas?

A. Certainly it is.

Q. Of course, it is. It is what kind of an effect?

A. It has the effect that as such use increases, the market for gas increases.

Q. And as the market for gas increases, the so-called market value of gas increases, does it not?

A. That is a general rule. There are exceptions?

[fol. 3839] Q. And as the market value increases, then the wider the spread between the contract price of gas paid by Panhandle Eastern to these five vendors and the so-called market price. Is that correct?

A. That is correct, yes.

Q. And then it follows, does it not, the higher the purported "value of gas purchase contracts."

A. I believe that follows, axiomatically.

Q. Now, we have a final figure of \$1,585,914 shown at the foot of Page 965 of Exhibit 39-A. Doesn't this amount, in reality, represent the savings anticipated by the company by reason of its having contracts for the purchase of gas at a lower price than the claimed present market value of that gas?

A. It represents the present value of the future savings to be effected by purchasing gas under these contracts, over buying that gas at $4\frac{1}{2}$ cents. It doesn't represent all the savings.

Q. I presume you are now referring to the 7 percent discount interest rate that you use and apply in Column F?

A. That is right.

Q. That is correct? A. That is right.

Q. The "difference" as shown in Column E represents the actual total savings, does it not? A. Yes, sir.

[fol. 3840] Q. And the amount of \$1,585,914 represents the so-called present value of that savings based on a 7 percent interest calculation. Is that correct?

A. That is correct.

Q. Now, doesn't your estimate depend upon the market value of gas remaining constant at $4\frac{1}{2}$ cents throughout the next 11 years?

A. No, sir, it does not. It is dependent upon $4\frac{1}{2}$ cents being its present market value. If that market value were to increase in the future there would be some additional savings in that respect. I think that price will increase in the future, but I have given it no effect in the determination of present values.

Q. Well, the exhibit is predicated upon your assumption, is it not, that the price ~~will~~ remain—that is, that the market price will remain at $4\frac{1}{2}$ cents for ten or eleven years in the future. Isn't that true?

A. No, it is not, because I have not made any such assumption. I have used $4\frac{1}{2}$ cents as the present value and I have applied that as the future value because it is the present value, always having in mind the expectation that those values would increase; but, I have not, in this compilation, given any effect whatever to that expectation.

I have used $4\frac{1}{2}$ cents as my estimate of the minimum price and future value, not that it will remain constant.

[fol. 3841] Q. Well, perhaps we can get at it this way. Assuming that the market price of gas at the well head in the Texas Panhandle Field were to drop to $3\frac{1}{2}$ cents tomorrow and stay at that price throughout the next eleven years, what would your value be?

A. It would be somewhat less and, conversely, if that price were to rise, my value would be somewhat more.

Q. Well, if it was $3\frac{1}{2}$ cents it would be quite a bit less, wouldn't it?

A. Yes, and if it was $5\frac{1}{2}$ cents, it would be quite a bit more.

Q. Now, of course, that is what I was referring to when I said that the calculation you have made here is primarily based upon an assumed price of $4\frac{1}{2}$ cents per M.c.f. for gas at the well head for the next ten or eleven years.

A. No, it is not that. It is based upon the assumption that $4\frac{1}{2}$ cents is the present price and the minimum in the future.

I make no assumption that it will remain constant. I make the assumption it will not decline, and I do not capitalize any excess savings over and above the $4\frac{1}{2}$ cent figure.

Q. Mr. Biddison, I am sorry that we have to quarrel about that, because I was certain that I understood this exhibit, and now I am not so sure about it.

Now, let's look at Column D. You are using a figure of [fol. 3842] $4\frac{1}{2}$ cents. That means $4\frac{1}{2}$ cents per M.c.f. Do we agree on that?

A. Yes, sir, it does, and I have used it for each year in Column—

Q. (Interposing) You use it for 1941, do you not?

A. Yes, and in 1942, and in 1943, and in 1944, and in 1945, and in 1946, and in 1947, and in 1948, and in 1949, and in 1950, and in 1951.

Q. And in each of those years you multiply the $4\frac{1}{2}$ cents by the number of M.c.f.'s purchased for each of those years, do you not?

A. Yes, sir.

Q. And you, in that manner, obtain the values shown in dollars in Column D, do you not?

A. That is correct.

Q. Well, that was my understanding.

And you say that does not mean that you are using a $4\frac{1}{2}$ cent per M.c.f. for each of those years?

A. No, I did not say that, Mr. Littman. I said that I did not assume that $4\frac{1}{2}$ cents would be the field price for gas throughout all that time.

I thought I had made it plain that I used $4\frac{1}{2}$ cents during that time as being the minimum, that I disregarded the expectation that there would be any increases.

I did not think there would be any decrease.

[fel. 3843] Such savings as would result from an increase over the $4\frac{1}{2}$ cent price in the future, I have ignored in the determination of present value.

Q. And you have ignored any decrease in the market price of gas, if any should perchance result, have you not?

A. That is correct, because I do not think there will be any. I think the tendency will be in the other direction, but I have given no effect to the tendency which I expect.

Q. In other words, you used the $4\frac{1}{2}$ cents throughout the 11 years? A. Again, I did.

Q. That is what I understood you did. Do you know what the market price at the well head is for gas in the Hugoton Field?

A. I think there is some considerable variation in that. I don't have anything before me now relating to that matter.

Q. Have you finished your answer? A. Yes.

By Mr. Littman:

Q. Did you make an examination or an investigation of the contracts of the Panhandle Eastern Pipe Line Company for the purchase of gas in the Hugoton Field, such [fol. 3844] as that which you have presented here with respect to the Panhandle Field in Texas?

A. No, except to a very limited extent, and that indicated that there were no purchase contracts under which there would be any material saving for any material length of time.

Q. Do you know, Mr. Biddison, whether Panhandle Eastern Pipe Line Company has gas purchase contracts in the Hugoton Field that are in excess of $4\frac{1}{2}$ cents per M.c.f.?

A. No, I don't. I don't remember the scales on those. I have had occasion to examine some of them at some times and, in this connection, I did go into the matter far enough to know that there was no great amount of difference on the whole or for any great period of time, between the contract price and the general field price.

[fol. 3846] By Mr. Littman:

Q. Now, Mr. Biddison, I call your attention to the annual report of Panhandle Eastern Pipe Line Company filed with the Federal Power Commission for the year 1940, and I call your attention to some contracts under which the average cost per M.c.f. is 5 cents, the names of those being—

Mr. Culton: What State are you reading from?

Mr. Littman: I will read them across the line.

By Mr. Littman:

Q. To-wit—I will give the names of the vendors and then the gas field and the point of receipt, the amount, the number of M.c.f.'s purchased, and the average cost:

W. L. Sidwell Oil and Gas Company, Hugoton Gas Field, point of receipt Stevens County, amount \$3,424.15, M.c.f.'s 68,483, average cost per M.c.f., 5 cents.

The same company, Hugoton Gas Field, point of receipt, Morton county, the amount is \$3,316.60, the number of M.c.f.'s purchased is 66,332, and the average cost per M.c.f. is 5 cents.

The next one is Saturn Oil and Gas Company, the gas field is Hugoton, the point of receipt is Morton County, [fol. 3847] the amount, \$13,592.90, the number of M.c.f.'s is 271,858, the average cost per M.c.f. is 5 cents.

Now, that same company also, as shown by this page here, delivers gas from the Hugoton gas field to Grant and Stevens counties in the amounts of \$29,245.65 and \$42,975.40, respectively, the number of M.c.f.'s being 584,973 and 859,508 M.c.f.'s, respectively, the average cost being 5 cents.

Also, there are shown to have been made to Panhandle Eastern by Southwest Kansas Oil and Gas Company from the Hugoton Field, the point of delivery being Stevens County, the amount being \$10,061.45, and the number of M.c.f.'s being 201,229, at an average cost of 5 cents per M.c.f.

There are also shown to be some sales—well, let's confine ourselves for the moment to those which I have named in the Hugoton Field.

Mr. Culton: You agree that is not all the sales in the Hugoton Field?

Mr. Littman: There are others at 4 cents and I note one at $4\frac{1}{2}$.

Mr. Wheat: While you are about it, why not read the names of the companies in the record so we will have them?

Mr. Littman: I will read any you wish.

Mr. Culton: I don't believe you called all the 5 cent companies, did you?

Mr. Littman: I called all the 5's. I will name the others.

[fol. 3848] Mr. Culton: Well, can't we stipulate there are numerous companies buying at 4 cents, some at $4\frac{1}{2}$ and these which you have named at 5?

Mr. Littman: That is correct.

By Mr. Littman:

Q. Now, Mr. Biddison, in view of the fact that Panhandle Eastern Pipe Line Company has these contracts for the purchase of gas in the Hugoton Field at 5 cents per M.c.f., which is $\frac{1}{2}$ cent higher than the so-called market price that you have placed on gas in the Panhandle Field, what opinion do you have with respect to giving us a little credit for the contracts that are higher than the market price of gas you have used, or don't you think that ought to be done?

A. I don't know what kind of credit you are asking for. The facts which you have related show that Panhandle Eastern Pipe Line Company is buying gas in the Panhandle Field at prices considerably lower than those generally prevailing in the Hugoton Field.

Now, I don't know what credit would be due to anybody on account of the Hugoton Field prices by virtue of that. I just don't understand it.

Q. Well, here is what I would like to know, Mr. Biddison: whether this so-called value of yours is made on a so-called one-way street basis, that is, whenever the contract is below $4\frac{1}{2}$ cents per M.c.f., whether you want to put an amount in the rate base under the guise of value [fol. 3849] of contracts, and whether when the price that you pay is higher than the market value, whether you want to deduct something by reason of the contract being disadvantageous. What is your position on that?

A. Well, now, if there are some contracts higher than the gas value, I would give that consideration, and find out the reasons for it. I don't know of any that are higher than the gas value.

Q. Higher than what? A. Than the gas value.

Q. Well, here are some that I have named that are 5 cents, which price is $\frac{1}{2}$ cent higher than that which you used as the basis of market value in your studies shown in Exhibit 39-A, page 965.

A. They are not in the Panhandle Field of Texas. They are in an entirely different location, 100 miles or more away, closer to the market, where the gas is produced under different circumstances with a different production

cost for gas, and you may have cited from the same page that in the Local Area in the neighborhood of Kansas, which is a still gas produced under different conditions, 300 miles further away, at different costs of production, that the prices are 7 and 8 cents.

Q. That is correct, and I believe that this exhibit does show that, 7 and 8 cents.

Mr. Wheat: What exhibit?

[fol. 3850] Mr. Littman: The annual report to which I have just referred and which Mr. Biddison has seen, does show that prices are paid as high as 7 and 8 cents in the Local Area.

By Mr. Littman:

Q. You, however, did not make any investigation of the contracts in the Hugoton Field, did you, Mr. Biddison, to ascertain the facts with respect to whether or not Panhandle Eastern was paying in excess of the market value to some vendors in that field? Did you?

A. I didn't conduct any investigation to determine that particular point. I did find out something about the prices being paid in that area.

As a matter of fact, I was somewhat familiar with those prices from having reviewed a similar compilation as the one which you have placed before me, but of about a year's higher age.

I don't know of any indication that Panhandle Eastern, under any gas purchase contract, is paying higher than the market value.

Q. Well, I believe you have already stated that you don't know what the market price of gas is in the Hugoton Field. Isn't that correct?

A. I have stated that there was considerable variation in that price.

Q. Well, the sum and substance of it all is that you [fol. 3851] did not make a similar study of the Hugoton Field such as that you have presented in Exhibit 39-A?

A. No. I made enough study to determine, in my opinion, that there was not enough difference between the contract prices Panhandle Eastern Pipe Line Company was paying and anything that might be construed as the

general field average, to justify placing any valuation upon the savings to be so effected.

Therefore, I didn't make any such determination of value.

Q. What investigation did you make? Please be specific, this time.

A. I made inquiry as to prices generally being paid, as to contracts for purchase of gas in the Hugoton Field.

Q. Of whom did you make inquiry, and what was the extent of your inquiry?

A. The extent of my inquiry was that I inquired of Mr. Hinton, who was production engineer, as to the prices being paid under the various contracts in the Hugoton Field, and based upon his information which he gave me in answer to my inquiries, I decided there was no material amount of saving to be effected under those contracts, under what might be construed as the average or general field price.

Q. Did you inquire of Mr. Culton too? A. I did not.

Q. Now, have you stated the entire extent of your inquiry on that subject? A. I have.

[fol. 3852] Q. You didn't ask Mr. Hinton the basis underlying his conclusions which you so readily adopted, did you?

A. I didn't adopt his conclusions, and didn't ask what conclusions he might have in the matter.

Q. What did you ask him?

A. I asked him the prices that were being paid under the contracts under which Panhandle Eastern Pipe Line Company bought gas in the Hugoton Field.

Q. And he told you, and you adopted what he told you. Is that it?

A. No, I didn't adopt it. I have not made any use of it.

Q. What did he tell you?

A. He told me what the prices were that were being paid.

Q. All right. By whom—give us the names of the companies—

A. By Panhandle Eastern Pipe Line Company to the producers of gas in the Hugoton Field from whom Panhandle Eastern Pipe Line Company purchases gas.

Q. I am asking you what inquiry you made with respect to the market price of gas? A. I didn't make any.

Q. That's what I thought.

.

[fol. 3861] P. McDONALD BIDDISON, a witness, having been previously duly sworn, resumed the stand and testified further as follows:

.

[fol. 3862] Recross Examination (Continued).

By Mr. Chamberlain:

.

[fol. 3879] Q. Now, I refer to Exhibit 108, which is your letter to Mr. Paxton, under date of December 13, 1937. You refer, to start with, in these words: "Provision for retirements, depletion and amortization for the year 1938", and in the body of the letter, you state that in keeping with his request, you have observed and compared the amount which the officers of Panhandle Eastern expected to suggest as the proper provision for retirements, depletion and amortization on a consolidated basis for the year 1938, and have found this amount, \$2,055,000, is [fol. 3880] within approximately \$60,000 of the amount which you consider proper and shall include in the report on the valuation of the Panhandle system properties which you have now in progress of completion.

.

Q. Now, I call your attention further to Exhibits 109 and 110, in which you again refer to the provision for retirement, depletion and amortization on a consolidated basis, and, in the latter part of these two exhibits, you refer to the reserves for retirement, depletion and amortization at the end of the year, stating that they are reasonable reserves based on an estimated life of the properties.

Now, why, in those cases, do you use the word "retirements" instead of depreciation?

A. Well, in those letters, I am referring to the accrual to a fund ordinarily called a depreciation reserve account into which there would go accruals for the purposes which I have mentioned in these letters.

The intent of the expression is to include accruals for all purposes for which accruals are generally made to depreciation and depletion accounts.

[fol. 3886] Q. In other words, then, we get right back to your depletion plan in Exhibit 67, and it is your judgment that you must indulge in a very considerable amount of speculation to determine the correct amount of the amortization charge or depletion charge?

A. Is that a question?

Q. Yes.

A. No, it is not. It is my opinion to do it that you have to make a rational estimate.

Q. First, you have got to determine the life of the field, have you not?

A. The life of the field needs to be determined, either as to years or as to its life in terms of units of production.

[fol. 3887] If it be determined first as to years, then that requires some estimate of the production during that term of years.

[fol. 3894] Q. Now, your next speculation comes in the question of whether these wells will get their proportion of the reserves in that field, does it not?

A. Yes.

Q. And if the gas should be drained away and they did not get it, your estimate would be off again?

A. That is true.

Q. And if they had early wells and drained the others, it would get a larger percentage? A. That is right.

[fol. 3895] Q. Now, in these Exhibits 109, 110 and 111, you have stated that, in your opinion, the reserves for retirement, depletion and amortization at the close of the year are reasonable reserves based upon age and estimated life of the properties.

Has anything changed your mind as to the estimated lives of this property since your letter of December 29, 1938, Exhibit 109?

A. I do not think so, no.

Q. In other words, when you wrote 109, it was your judgment that the property had an estimated life of 25 years?

A. I think I had in mind that it was safe to assume 25 [fol. 3896] years future life.

Q. Let me ask, Mr. Biddison, the period you have used for the remaining life of the Texas Panhandle Field for amortization purpose?

Q. I asked you what period you used?

A. The period which I used for the Texas Panhandle Field is to December 1, 1957.

Q. That would be 16 years, would it not?

A. Well, it is 26 years following December 31, 1931. It is 16 future years from 1941.

Q. Now, I would like to ask you what method you took [fol. 3897] to determine the proper accrual for depreciation, depletion and amortization on the Panhandle system in 1937 and 1938?

A. I determined a depletion unit for leases and wells. That unit was based upon reserves estimated by Ralph E. Davis and, as I recall it now, the future development costs were based upon the number of wells which he estimated to be required to produce the reserves.

I also estimated the accruals which would be required to meet the cost of retirements while the project was operative, and I combined these two with an estimate of requirements for a sinking fund for ultimate amortization. The general scheme by which I tested the matter at that time is about as I have presented the matter in this case.

[fol. 3899] Q. Your system, as I understand it, is a comprehensive system which, in your judgment, if followed, will return to the utility the full investment and not appre-

ciably more during the period which you estimate to be the life of the field. Am I correct in that?

A. That is correct.

[fol. 3901] Q. And in that year, by your Exhibit No. 111, you recommended as proper what Panhandle Eastern has suggested as a proper provision of \$2,400,000, is that right?

A. That is the figure recommended as a proper figure for the year 1941, as shown in Exhibit 111, yes, sir.

[fol. 3902] Q. Now, an accrual of \$2,400,000 that you recommended included the amount that was being accrued for the amortization of gas contracts in the sum of about \$336,000, did it not?

A. For amortization of gas sales and purchase contracts, this exhibit shows for the year 1941, \$329,110.13.

Q. And you understood they were amortizing over a period of ten years at least \$2,900,000 of gas purchase [fol. 3903] contracts, did you not?

A. Yes, sir.

Q. And your Exhibit No. 111 specifically provides that the amount is one which includes provision for the amortization of gas sales and purchase contracts, does it not?

A. Yes, sir.

[fol. 3904] Q. Then for your accrued provision for 1941 of \$2,400,000, about what portion would be for the depletion and amortization of property, as distinguished from the gas purchase contracts?

What I want, Mr. Biddison, is the continued relationship of that percentage to the property if it be true.

A. And for what period did you ask that?

Q. 1941. You approved \$2,400,000. Now, if the \$329, [fol. 3905] 000 or whatever it is, \$336,000, or some

thing, be deducted, the balance would be for the amortization of property, would it not, including the depreciation and depletion?

A. Yes.

Q. All right. Now, will you make that deduction, approximately, and give us the percentage, in other words, that you accrued for the year 1941?

A. Well, the accrual for depreciation, depletion and amortization of plant, property and equipment as part of the \$2,400,000 shown in Exhibit 111, would be about \$2,070,890.

Q. That is right, and what percentage now would that be of your property account as of the beginning of the year?

A. About 3.19 percent on \$64,854,956.29 of property account shown in Column F of Schedule 5 of Exhibit 106.

Q. Then, without regard to the method you used in arriving at the proper amount of the accrual, it did maintain practical uniformity with your previous recommendations on the property account?

A. Yes.

[fol. 3906] Q. Yes, but what I am trying to get at, I am trying to get the reason for this recommended departure from their policy as to these accruals.

Was your recommendation due to the fact that you did not think that what they were accruing during those years was sufficient to fully amortize the property within the period which you deemed to be conservative in judging its life?

A. Well, I realized that prior to about 1937, their accruals had been very low, but I did not make any determination as to whether there was an insufficiency as to one particular result or possibly some other result.

I simply conferred with them on what the accruals should amount to in view of the property that then existed, and started from that point on forward.

Q. Yes, I realize that too, and that before that time, there were reasons why those accruals were inadequate, but when you were asked to determine the amount which

[fol. 3907] would be proper and reasonable for those purposes, it necessarily implied the purpose for which the accruals were to be made, did it not?

In other words, whether it was merely for depreciation and depletion or whether it was made to cover both of those and the future amortization of the property?

A. Well, it was necessary for me to test it out as to whether the amount of money proposed to be set aside would accomplish the three-fold results of providing for depletion, for retirements while the property was operative, and, eventually, getting the capital sum back.

[fol. 3910] Q. Now, let us see what you have recommended here, using your corrected exhibits and see if we understand now, correctly, what you feel should be accrued upon the present existing property for the entire purpose of amortization, depletion and depreciation plus, apparently, the amortization of gas purchase contracts.

Will you give us the amounts now that are necessary to be accrued?

A. From Exhibit No. 66-A, Line 14, Column C, Page 1, —\$1,466,224.63 for amortization of property.

From Exhibit 68-A, Line 38, Column D, —\$681,680.82.

This is for the purpose of meeting the cost of retirements which will be incurred while the property is operative.

Now, in addition to these amounts, there should be charges for depletion on the amount of gas produced. I do not have before me an estimate of the amount of gas to be produced for the year 1941.

Q. Didn't you read that amount into the record on November 27?

[fol. 3911] The Witness: I have before me those figures which I think I read into the record at some stage of these proceedings.

Q. I thought you did. I have it as of the date November 27, but I have a little larger amount. I have here \$143,873.69. Do you have that?

A. I do not have that figure before me. That might be the figure based upon the estimate for the year 1941.

Trial Examiner: I have Mr. Wheat's statement here at Page 2782 of the transcript, and I will hand this to Mr. Biddison.

[fol. 3912] The Witness: On Page 2487 of the record, these two figures are explained.

That is my statement in reply to a question by Mr. Wheat.

Then, at Line 13, Mr. Wheat explains the figure he read is \$136,614.11 and the figure for 1941, based upon the estimate of the actual gas volume for that year, and which I read into the record a moment ago, is \$143,873.69, so the smaller figure represents the application of the depletion units which I determined to the actual production for the year 1940, while the larger figure is an estimate for the year 1941.

Q. Well, I assume that if you were attempting to arrive at the amount which should be accrued, you should use the larger figure, Mr. Biddison?

A. That is correct.

Q. All right. Now, the sum of the three is the amount which you indicate should be accrued, is it not?

[fol. 3913] A. That is correct, yes, sir.

Q. And what is that? A. \$2,293,779.14.

Q. Then the careful study that you have made and the corrections that you have gone through have shown you that your suggestion as to a proper provision for 1941, as shown by Exhibit 111, was about \$106,000 high?

A. It indicates that, yes.

Will you now give us the amounts which have been included in this accrual for the amortization of gas con-

tracts for purpose of subtracting that from the total amount of your amortization to ascertain the amount which is accrued upon the property account alone?

A. I think that amount is \$317,384.50. It is composed of three items.

Q. I put down two items here, \$293,218.64.

And \$23,910.67.

A. There is a third item, Mr. Chamberlain, which you [fol. 3914] apparently missed.

You will find the third item on Page 17, Column K, Line 26 of Exhibit 66-A in the amount of \$445.19.

Q. Yes, I overlooked that. Will you deduct that, then, from the total amortization of \$1,468,224.63, and give us the amount of the accrual upon the property alone?

A. \$1,150,840.13 is the accrual on property alone for amortization.

Q. All right. Now, will you add the accrual for replacements and depletion, and give us the percentage that that bears to property, plant and equipment account?

A. The amount is \$1,976,394.64.

Trial Examiner: What year is that for?

Mr. Chamberlain: 1941.

Q. Now, will you use your machine and give us the percentage that that bears to your consolidated property, plant and equipment account at the beginning of the year?

[fol. 3915] A. Using the figure from Exhibit 106, Schedule 5, of \$64,854,956.29, the ratio is that of 3.047 percent.

Q. Yes. Now, referring to Exhibit 49, is it not a fact that the company by this exhibit shows that it proposes to accrue for amortization and depletion of the property \$2,078,171?

The Witness: \$2,078,171.

Q. Now, will you add to that the amount that they propose to accrue for amortization of gas contracts which appears to be in the sum of \$336,486?

A. This makes \$2,414,657.

Q. Then how much is that in excess of the amount which you have concluded would be the proper amount to accrue for ~~all~~ of those purposes?

A. \$120,878.

[fol. 3919] P. McDONALD BIDDISON, a witness, having been previously sworn, resumed the stand and testified further as follows:

Q. At our last session, you testified that in your Exhibit 66-A, you had provided for an annual accrual for amortization of gas contracts in the aggregate amount of \$317,348.50, as I recall it.

Now, why did you provide in your amortization schedule for the annual accrual on these contracts?

A. Well, because they have to be amortized and this is an amortization problem that I was dealing with, so I included them with the other amortization.

[fol. 3921] Q. And then did you make some effort before presenting your exhibit to this Commission to ascertain whether the book entries which you propose to amortize represented cost or value, or did you not?

A. I did not make any investigation of the matter. I took the book entries as being cost.

Q. And did you have any information from the company as to whether or not the book entries for gas purchase contracts in the sum, I believe, of \$2,930,286.46 were write-ups?

A. No, sir, I did not.

Q. Did you have information that the other gas purchase contracts which appear on the ledger sheets and may [fol. 3922] be identified in Exhibit 52, Page 2, in the sum of \$365,334.99 were write-ups?

A. No, sir, I did not.

[fol. 3937] Q. Would the fact that the development of the business of Panhandle Eastern followed a normal or ordinary pattern entitle a utility, in your judgment, to have in its rate base an amount which represented a charge, or which represented an amount computed as the cost of carrying unused capacity if it had been possible for the officers to have readily sold the capacity of the line during the development?

[fol. 3938] The Witness: I think I can best answer Mr. Chamberlain's question by a broad statement of opinion on this matter as I view the matter, and that is this:

I believe that when an operating company has become successful, has proved that its project was sound, has gotten on an operating basis where they are earning a fair return and have overcome all these difficulties of business attachment, that they are entitled to have considered as part of their rate base an amount representing what is the normal cost of development of business regardless of whether, during the early period of operation, they made money or lost money; regardless of whether, during the early period of operation, their judgment was sound or unsound.

The fact that the difficulties have been overcome and that the business has been attached adds a value to the project which it otherwise would not have. It adds a value above that of the cost of the physical elements of the property and anybody who sets out to buy a utility property would, in my judgment, pay more for the one which had overcome those handicaps that usually beset an industry than it would for one who was still in the throes of it.

[fol. 3940] Q. But it is your belief that a business, which has become a going business is entitled to that allowance, whether it had made money from the start or not, is that right?

A. That is right.

Q. And whether it could have made money had it been so inclined from the start, is that your feeling?

A. That is right.

.

[fol. 3943] Q. If the stockholders in control of Panhandle Eastern were engaged in an illegal conspiracy to prevent the company from selling any more gas than such amount which pay only its fixed charges for the purpose of forcing the other and minority stockholder into bankruptcy and the security into an enforced sale, would you still say they were entitled to an allowance of what you term "cost of development," covering that period in which they were so engaged?

A. If they have developed the business and that expense would not be incurred by a purchaser, I think the value inheres and should be included in the rate base no matter what has been the past history or the past litigation, and I do not think it makes any difference whether the stockholders fought among each other or whether there were floods and storms.

The question is answered by what has happened as to the full development of the business at this time.

.

Mr. Goodman: Mr. Biddison, in presenting a figure of development cost or development value, you made a certain [fol. 3944] use of what you considered to be the actual cost of carrying unused capacity, is that right?

The Witness: Yes, sir.

.

Mr. Goodman: Now, you had in mind a certain normal pattern of development, did you not?

The Witness: Yes.

Mr. Goodman: And you then used the figures of development cost as something which corroborated your general estimate of what the normal situation as to development cost would be, is that right?

The Witness: No, I did not make any separate estimate of it.

Mr. Goodman: You found, did you not, first, that a company, and specifically this company, would be entitled on the basis of a normal pattern of development, to have an allowance in a rate base for the calculation of rates for development cost according to a normal pattern of development.

You then looked at the figures and saw that these figures were, in general, in accordance with such normal pattern and, therefore, you determined to testify to development costs in accordance with those figures.

Now, do I state it substantially correctly?

The Witness: Suppose I tell you what I did?

Trials Examiner: I think perhaps, Mr. Goodman, you unduly limit the witness when you say "determined to testify."

Mr. Goodman: Yes, I think so. I think that part is bad. I want the question stricken, and I will try it again.

Now, Mr. Biddison, you had in your mind that a business such as this and, specifically, this business, ought to be entitled to an allowance in its rate base to be used in the [fol. 3946] calculation of rates for the cost of developing business, is that right?

The Witness: That is right.

Mr. Goodman: And you also had in your mind that that allowance should be something in accordance with a normal development pattern, isn't that right?

The Witness: That is right.

Mr. Goodman: You looked then at the costs of carrying unused capacity, is that right?

Mr. Wheat: What did you say? Is that what?

Mr. Goodman: You made yourself familiar with the costs of carrying unused capacity, as reported to you, is that right?

The Witness: That is right.

Mr. Goodman: And you found that those costs were in accordance with your idea, then, of the normal development pattern?

The Witness: That is right.

Mr. Goodman: And, therefore, you predicate your allowance upon the considerations which I have mentioned in my questions and which you have confirmed, is that right?

The Witness: That is right.

[fol. 3948] Q. Now, if by the deliberate act of the management the date was deferred for many years in overcoming these initial difficulties incident to operating and taking on of patronage, would you say that the going value would be increased by the years of delay and measured by the cost of the carrying charges on the unused capacity?

A. I have not said anything about going value and I do not know what you mean when you use the words.

Q. Well, change it to cost of developing the business. I will state it again if you want it.

[fol. 3949] Is it your opinion that if the management of a company would deliberately and unnecessarily delay the development period and, by reason of their own negligence or desire, they delayed the overcoming of these initial difficulties incident to operation and the gaining of patronage for, let us say, nine years, would you say that they were entitled to add into the rate base an amount for the cost of development based upon the carrying charges of the unused capacity for the full period of nine years?

A. Not necessarily. It would depend upon whether or not the period was a normal period and whether the rate of development was a normal rate of development.

If, however, after all these things had happened, the business was finally attached and developed, then there is a value that inheres in the property which can be measured by the normal cost of that development.

Q. Then, that allowance would have no direct relationship to the amount of time which was consumed in overcoming these initial difficulties, I take it?

A. Only if the amount of time consumed were a normal amount of time.

Q. And then, in this case, you adopted 4½ years and you allowed the carrying cost of the unused capacity for the full period, did you not?

A. Yes, sir.

[fol. 3950] Q. And that was on the theory that that was merely a normal period of development of this business?

A. Yes, sir.

Q. And it is your philosophy here that the company is entitled to that allowance, whether the management actively engaged in overcoming these initial difficulties and could have overcome them within a year after the property was put into operation had they so desired?

A. Yes, sir, it is my opinion the value inheres in a property even if the management had actually attached all this business 30 seconds after they hooked up the last joint.

Q. You say it inheres in the business. Let me ask if it is your philosophy that the company is entitled to collect as against the public for an allowance in the rate base for the cost of such development which is unnecessarily delayed by the deliberate act of the management?

• • • • •

Q. You would not allow it then, if the delay was purposefully caused by the management?

A. I would allow only that which would be a normal cost.

Q. Does that normal cost differ under different circumstances or is there some standard that you go by that you would allow a company or make the company an allowance without regard to its own individual development?

A. I think one can set up a measure of the matter from experience and development of business in such cases and apply it regardless of the actual history.

Q. Did you make any investigation, Mr. Biddison, to ascertain whether this period of 4 1/4 years was a normal period of development with respect to Panhandle Eastern Pipe Line Company?

A. I know from my own experience that it takes about five years to get the development of a business in the natural gas industry.

Q. I asked you whether you had made any attempt to ascertain the facts with respect to this individual company?

A. Well, knowing that five years is a normal period to do it in, I come to the conclusion that this five years or [fol. 3952] substantially five years is a normal period.

Q. Then you were led to believe that this was perfectly all right because you considered that a normal period, is that right?

A. That is precisely it.

Q. And you made no attempt then to investigate to find out whether it could have been developed in a much less period, did you?

A. No, sir, I did not.

Q. You made no specific investigation of this company at all, did you, with respect to the policies and conduct of the management with respect to taking on business?

A. No, sir, I did not.

Q. And you have presented your exhibits in this case without having made any such investigations?

A. Certainly.

Q. And you were in Texas when the pipe lines were built out from the Panhandle Field?

[fol. 3953] A. I was there when some of them were built from that area.

Q. Now, are you familiar with the experience of some of those lines with respect to putting on business?

A. Yes, sir.

Q. Tell us now how long the Natural Gas Pipe Line Company of America was in getting its business on?

A. I cannot tell you.

[fol. 3954] Q. And now, what about Northern Natural? How long did it take them to put business on?

A. I haven't any statistics on Northern Natural before me. I know it took some little time to get the business on.

[fol. 3957] Q. And now you know it to be a fact, do you not, Mr. Biddison, that Northern Natural, by the sale of interruptible gas, boiler gas and dump gas, paid its way from the start?

A. No, I know that Northern Natural did sell some interruptible gas in its early history and I guess still does.

Q. Now, you know, as a matter of fact, that it made an outstanding record, do you not, simply by selling gas at a low price pending the time when the business would be developed and the sales made more to domestic and commercial consumers?

A. I understand they pulled themselves through a very critical period by doing that.

Q. And it was the same period that Panhandle Eastern went through, is it not?

[fol. 3958] A. I believe so.

Q. The time was identical, was it not?

A. I believe so, substantially so.

Trial Examiner: When you refer to a critical period, do you have reference to the condition of the particular company mentioned or to economic conditions generally prevailing?

The Witness: To the latter, producing the first effect.

[fol. 3976] Q. Mr. Biddison, did you not direct the making of Exhibit 38?

[fol. 3977] A. I outlined the policy for the making of Exhibit 38.

Q. And you had direct consultation with Mr. Morton about it?

A. Well, I had some consultation with him. I don't know whether it is properly referred to as direct or not.

Q. Well, so far as you know, he did what you asked him to do, did he not?

A. Yes.

Q. And these figures, if he has taken them down correctly, represent what you intended to have him represent, do they not?

A. Yes.

Q. And they are the basis upon which you have formed your judgment in suggesting to the Commission an allowance of five and a half million dollars in the rate base of Panhandle Eastern for the cost of business development, is it not?

A. For the cost of carrying idle capacity as an item in cost of business development.

Q. Now, will you refer to, let us say, Line 5, Column D, and state the amount of the investment in Panhandle Eastern as at the close of 1935 upon which—

[fol. 3978] A. \$37,716,811.

By Mr. Chamberlain:

Q. And is that about the average of the investment during that development period?

A. Very close to it, at least, according to the statement.

Q. Now, what per cent, then, is five and a half million dollars which you suggest as a normal allowance under the cost of business development, as compared with the investment?

A. 14.56.

[fol. 3980] Q. What is the percentage that you have set up for the cost of business development as compared with the average cost of the property plant and equipment account as of the close of 1935?

[fol. 3981] A. 16.05 per cent.

The Witness: I divided the \$6,053,992.48 at Line 33, Column B, Page 966 of Exhibit 39 by \$37,716,811 shown at Line 5, Column D, of Page 1, of Exhibit 38.

[fol. 3987] Q. Now, you found that this pipe line was erected toward such industrial centers as Indianapolis and Detroit, did you not?

[fol. 3988] A. Yes. Directed towards across Missouri and Illinois and the State of Illinois, eastern industrial center, there is a big industrial development in Indiana, and there is a big industrial development in Ohio, as well as a big industrial development in Detroit and other portions of southern Michigan.

Q. And did you make any study as to what efforts had been made by Panhandle Eastern Pipe Line Company to obtain sales contracts in either Indianapolis or Detroit prior to 1935?

A. I did not, nor any place else.

Q. Were you aware that the contract in Detroit was obtained after the Department of Justice had brought an antitrust action against the stockholders in control of Panhandle Eastern Pipe Line Company seeking to compel divestment of their interests in the pipe line?

A. Well, I knew some such action had been had, but I am not certain as to the sequence of events in regard to it.

At any rate, I didn't make an investigation of it in this connection.

Q. Did you make an effort to ascertain the policy of the management of Panhandle Eastern Pipe Line Company with respect to the sales of gas during this development period?

A. I did not.

[fol. 3989] Q. Did you know that they adopted the policy of refusing to sell natural gas to municipalities or to municipally-owned utilities?

A. No, sir, I did not.

Q. Would the refusal to sell gas have any bearing, in your judgment, as to the right to collect for the cost of business development?

A. I don't know what you mean by collecting for the cost of business development.

Q. Well, if the company absolutely refused to sell gas, would you base your claim for business development or the cost of development in the same way that you have made it in this case?

A. Well, I don't know. I would have to investigate the merits of the dispute before I could answer that.

Q. Well, I take it you would give them the same amount for four and a half year's cost of carrying this capacity, whether they could have sold the gas or not, is that right; during that period?

A. I don't know. I say I would have to investigate the merits of the dispute.

Q. Well, suppose there were no merits in it: it was simply a refusal to sell to a municipality, would there be any merit in that?

A. I would think so, Mr. Chamberlain, but I will repeat [fol. 3990] what I have previously stated several times, that after the business is attached, then I think it is proper to include in the rate base that amount which would be normal to be incurred in attachment of the business, regardless of the merits of all the past disputes they have had, and whether their policy was good or bad, and whether they took the business on quick or slow.

[fol. 3991] Q. Did you make any inquiry whatsoever as to whether the management of Panhandle Eastern Pipe Line Company repeatedly refused to sell natural gas in territory which was being served by other utilities?

A. I did not. I have repeatedly so stated, that I didn't make any inquiries along those lines.

Q. All right. Now, you knew of the inquiry before the Federal Trade Commission with respect to Senate Resolution No. 83 of the 70th Congress which was reported in various parts of Document 92?

A. Yes, I know of that.

Q. You have read various of the documents with respect to Panhandle Eastern that were published in those reports, have you not?

A. Yes.

Q. And you know the history of the company, in a general way, at least?

A. I have an idea of the history, yes. I don't know it in detail, but I have an idea of it.

[fol. 3999] Q. Mr. Biddison, I am placing before you part No. 84-1 and part No. 84-a of the Federal Trade Commission reports in response to Senate Resolution No. 83 of the 70th Congress, being Document No. 92, and parts 84-1 and 84-2 and I would like to ask you to take a look at those, and the indexes, and see if you do not recognize them as volumes which have been in your possession and which you have scrutinized?

A. Well, I believe they are. I think I have copies of them in my files and I have referred to various volumes of this report, I think probably to these two upon occasion.

Q. I also hand you parts 82 and 83, and ask you if you have not had those and scrutinized them?

A. Yes, I have had those, and I have made some references to them in some studies I have made.

* * * * *

[fol. 4000] Q. And you have made no effort to look through those reports to see what the past history of the company has been with respect to sales?

A. I have referred to those volumes at various times for various purposes, but I have never read all of any of the volumes nor analyzed the information in there about the various controversies.

* * * * *

[fol. 4001] Q. Now, let me ask you one question. Did you or did you not read a copy of a letter written by Mr. T. B. Gregory to Mr. Minnig which happens to be printed on Page 375 of Part 82 and to relate to the matter of sales for some point in Missouri on application to the Panhandle Eastern Pipe Line Company?

A. I do not remember ever having read it. I might have, though, but I just do not know.

Q. Well, did Mr. Gregory ever tell you that he had refused sales from the Panhandle Eastern Line in 1934 for the reason that they had commitments of gas to be carried which would be sufficient to absorb the entire capacity of the line with a proper safety factor under normal conditions?

[fol. 4002] A. No, sir, Mr. Gregory did not tell me that, nor did he tell me anything else about Panhandle Eastern Pipe Line Company at any time.

I have never discussed Panhandle Eastern Pipe Line Company with Mr. Gregory nor any other pipe line company nor any other gas company.

Q. You will not say you did not read that letter, Mr. Biddison, I take it?

A. I will say I do not know whether I read that letter or not, I do not know. I may have, but I do not know.

Q. All right. Let me ask you whether you recall reading the testimony of Mr. William G. Maguire which appears on Page 401 and several pages following of part 82?

A. I do not know whether I read that or not.

Q. Do you know that you did not read it?

A. No, I say I do not know whether I did or not.

Q. In other words, you have no recollection if you did read it?

A. That is right.

Q. And I take it that you did not go back and examine these before you prepared your exhibit on the cost of business development?

A. I have so definitely stated, two or three times.

Q. And did you have information prior to making out that exhibit that the Kansas City Power & Light Company [fol. 4003] desired gas from Panhandle Eastern in 1932 and would take 10 million feet a day at around 13 or 13½ cents and that the management of Panhandle Eastern refused?

A. No, I did not.

Q. And you do know, however, that they went 200 miles farther and sold a large amount of industrial gas to the Atlas Cement Company at Hannibal, Missouri, do you not, at about 11 cents?

A. I do not know at what price they sold that gas.

Q. And you have not had the exhibits in this case which showed at what price they sold the gas?

A. No, sir, I have not.

Q. Now, do you recall reading in this Volume 82 in the testimony of Mr. Maguire that he had a commitment for sale of natural gas with the Great Lakes Steel Company at Detroit for use in their open hearths and soaking pits at Detroit?

The Witness: No, sir, I do not know what contracts Mr. Maguire may have obtained.

By Mr. Chamberlain:

[fol. 4004] Q. You never heard of that?

A. I might have heard of it. I do not know. I have heard that company discussed some time or other as a possible gas market, but I do not know what the situation was in regard to the discussion now.

Q. And did you read in that same volume, 82, on Page 332 with respect to Mr. Maguire giving up the negotiations with respect to Mr. Gossler?

A. No, I do not. As a matter of fact, I read very little about the various arguments in those documents. I was interested in other matters.

Q. You knew that arguments had occurred, I take it?

A. Yes, at least I had heard that they had occurred. I had no personal knowledge of them.

Q. Did you not know that at the City of Fulton, Missouri, they requested gas service and had to fight the Panhandle Eastern through the Missouri Commission and the Supreme Court of the State in order to get it?

A. No, sir, I do not know anything about that matter.

Q. Did you not see the controversy between Panhandle Eastern and that municipality printed in the papers and the trade magazines?

[fol. 4005] A. I might have. I do not know.

Q. Do you remember anything about the controversy with Fayette along the same line?

A. If I did, I have no recollection of it and I do not know what the controversies were, if there were any.

Q. Now, did you make inquiry as to the form and amount of the rate that Panhandle Eastern sought to establish in Illinois in 1932 and 1933 during what you used as the development period?

A. I did not.

Q. You made no effort, I take it, to find out whether they made a rate which was too high to permit of its use by the public?

A. I made no investigation of it.

Q. Do you recall reading from the copy of the minutes of Panhandle Eastern which are printed in Volume 82 of Page 890, wherein the president of the company, then your friend Mr. Crawford, made the statement that it was agreed that any gas to be taken under the contract of September 17, 1930, by Columbia Gas and Electric Corporation would be for supplying Indianapolis and Northern Indiana territory extending to Detroit and other points in Michigan and connecting with existing pipe lines in Ohio and that [fol. 4006] it was likewise definitely agreed that any gas to be taken under such contract with Missouri-Kansas Pipe Line Company would be only for the purpose of supplying gas to southwestern Indiana through Terre Haute and south to Nashville, Tennessee, and that, "Panhandle Eastern Pipe Line Company hereby notifies both Columbia Gas and Electric Corporation, and Missouri-Kansas Pipe Line Company that it does not consider that either of them would be entitled to gas under such contract, if the gas is to be used in violation of the above agreement for the purpose of interfering with the distribution of gas by the other party."

Do you remember reading that?

A. I do not remember that.

Q. You have heard about that, haven't you, Mr. Bid-
son?

A. No. I have heard there were arguments about some contracts but I have never investigated what the argument was about, and have not been interested in such features as that in this connection or in any other connection.

Q. You had heard about the difficulties they had as to the allocation of territory, had you not?

A. I understood there was some question about the allocation of territory but I never investigated what the relative attitudes on the matter were, and I do not know anything about it now.

[fol. 4007] Q. Then you did know there was a dispute as to allocation of territory?

A. I have known there had been some such disputes, yes, but, as I say, I do not know anything about the attitudes of the various parties in the matter, have never made an investigation in the matter and have never attempted to find out about it.

Q. Do you recall the investigation which was instituted by the Counsel of the City of St. Louis looking toward a gas supply and the inquiry made of Panhandle Eastern for gas for that area?

A. I think there was some such thing as that about 1938, if I recall, but I do not have any information about the extent of the matter.

Q. That was much earlier than that, was it not, because their line was fully used in 1937.

A. Well, I recall that there was something occurred about the matter at about that time. About any earlier propositions on it, I do not have any information.

Q. Didn't you read in the public prints at that time that they refused to sell gas to St. Louis because that territory was being served by Mississippi River Fuel Corporation?

A. I do not recall ever reading any such thing. I read a great many things to which I do not attach enough importance to try to remember.

[fol. 4008] Q. Do you recall reading on Page 977 of Volume 82 a statement made by Mr. Munroe, who was then president of Columbia Oil and Gasoline Corporation, that the capacity of the line was about 80 million feet daily, but that you would not be safe in assuming over a 50 percent load factor and when Mr. Russell stated to him that any proposition could not be a success operating at 50 percent of capacity, Mr. Munroe replied, "Well, that is all we can expect."

Did you read that?

A. I might have. I do not know whether I did or not.

.

[fol. 4009] Q. Now, in your testimony, you referred to the matter, as I recall it, along the line of an economy in the construction of a pipe line to build additional capacity for future use. Is that right?

A. I believe I made such a reference, yes, sir.

.

[fol. 4010] Q. Well, may I read this to you from Pages 557 and 558:

"Panhandle Eastern would not have been justified in building a smaller line with the expectation of increasing from the 80 million capacity to the 125 million capacity by looping; it simply would not have been economical to have done so. You can make a rough comparison of it on the basis that a single 24-inch line, such as they did build, would cost about \$30,000 per mile, and an 18-inch line, having, roughly, half the capacity of the 24-inch, would cost about \$20,000 a mile; so that the two 18-inch lines would have cost about \$40,000 a mile compared to \$30,000 per mile for the 24-inch line."

Do you recall testifying in those words?

[fol. 4011] A: That sounds like what I said.

It is possible to build an 18-inch line under some conditions for around \$20,000 a mile and, under other conditions, at about maybe less than \$18,000 a mile. It is also possible on the 24-inch line that you might have a price variation from \$30,000 a mile down to something less than \$24,000 a mile, maybe down, in some instances, to as low as \$22,000 a mile.

I did not try in that example to state the costs precisely for either size of line but to give an idea of the fact that when you got done, two 18-inch lines would cost you materially more than one 24-inch would cost.

Q. Well, you can tell the relative capacity of those two lines, can you not, how much more than double the 24-inch line will carry than the 18-inch line?

A. Yes, that can be calculated within a fair degree of accuracy.

Q. Would it not be a little over twice as much in the 24-inch line?

A. Well, I do not remember right now, except that two 18-inch lines is somewhere close to the capacity of the 24.

[fol. 4018] The Witness: I used that proportion of the cost of the actual system which was unused up until the capacity was required.

Q. That is right.

A. And I divided the cost of that system as between used and unused capacity in the ratio of loading to non-loading.

Q. Direct ratio?

A. Yes, sir.

Q. And not with respect to what the excess cost would have been or what the excess cost was over and above what it would have cost to have built the line for the 50 percent capacity?

A. In proportion to what the excess cost was, not in proportion to what the excess cost would have been if [fol. 4019] something else had been built.

Q. No, I will illustrate it this way. If you had a 50 percent capacity in your line used and the line had cost you any amount, let us say \$30,000,000, you have then computed the cost of carrying this unused capacity on the basis of one-half of the total cost, have you not?

A. Yes, sir.

Q. And if you had to build a line to serve one-half of the capacity, it would cost you not one-half of that cost but more, would it not?

A. Yes, sir, it would.

Q. Then you are not computing your estimate of this cost on the cost of what was spent for the excess capacity, but directly proportionate to the demand which was made upon the line?

A. I am doing both. I am allocating the costs proportionately between used and unused capacity as those factors existed, and the cost which I am using in each case is the cost of that capacity.

[fol. 4053] P. McDONALD BIDDISON a witness, having been previously sworn, resumed the stand and testified further as follows:

[fol. 4082] By Mr. Littman:

Q. Now, Mr. Biddison, you discussed the matter of the selection of the inspection points and the making of the inspections at some length in your redirect examination,

and you made numerous references to members of the Federal Power Commission's staff.

I believe you testified that on July 23, 1941, Panhandle Eastern Pipe Line Company invited the Federal Power Commission to designate some member of its staff to accompany you on your inspection tour. Is that correct?

A. I do not know that that is quite correct. As I recall it, my testimony was that at a conference on the preceding day it was decided to do that, and I knew that it had been done.

Now, it is possible that the day on which it was done was the 23rd, if the letter supports that date—I don't know [fol. 4083] exactly about that now without the letter before me.

Q. Then you testified that, thereafter, you had a conference with Mr. Zinder and with Attorney McAllister, both of the Federal Power Commission, did you not?

A. Well, I think I stated Mr. Zinder and Mr. McAllister, without qualifying their positions.

Q. Now, that conference was held on what date?

A. I believe that was August 1st. I am not certain on that.

[fol. 4084] Q. Now, you had a map at that time which you had prepared showing the inspection points which you had proposed to visit, did you not?

A. Yes.

Q. And can you tell us at this time how many inspection points were on that map, that is, on August 2?

A. No, I think there were about 50 on there. I do not know the exact number now.

[fol. 4085] Q. Suppose you give us the conversation that was had at this conference with respect to these test holes and inspections.

Maybe that would be specific enough for you to recall. I am not asking you for the conversation word by word, but your best recollection of it.

[fol. 4093] The Witness: I produced a map on which I had marked in pencil the proposed locations of about 50 test holes and explained to those present at the conference that, in addition to the number of test holes so located on that map, I thought there should be added about another 25 locations, that is, about 50 percent more; that with the addition of that number of holes, it was my idea that we had enough test holes to sample this property in view of its age and probable condition; that it was at least as many holes that I would think necessary to dig to examine the pipe in the case of a purchase and sale of the property.

By Mr. Littman:

Q. That was your part of the conversation, is that right? In other words, those are the things that you said in substance, Mr. Biddison?

A. Yes.

Trial Examiner: Proceed with your answer.

[fol. 4094] The Witness: I further suggested that the additional locations might well be selected by representatives of the Commission if they desired to do so.

Mr. Zinder and Mr. McAllister being present, both expressed the idea—

By Mr. Littman:

Q. (Interposing) Just a minute, I want the conversation now.

Mr. Wheat: As he best can recollect it.

The Witness: Both expressed the idea that the number of holes so selected would be sufficient. They were glad and so expressed themselves, that an extremely large number of holes had not been decided upon and a comparison was made in that respect by Mr. McAllister with some other utility, which one I do not now recall, as to the large number of holes dug or proposed in connection with a similar situation.

At the suggestion of Mr. McAllister or Mr. Zinder, I do not now know which, Mr. Neuner agreed—

By Mr. Littman:

Q. (Interposing) Just a minute, I object to what Mr. Neuner agreed. I want the conversation or the substance of the conversation.

Trial Examiner: Let him make his broad statement and complete it first, then you may go back over it if you wish.

[fol. 4095] The Witness: Mr. Neuner agreed to furnish them with certain maps and I know an attempt was made to get those maps in the mail upon the same day so that those maps would be available to engineers of the Federal Power Commission in connection with location of test holes.

Now, that is the substance of the conversations as I recall them now on this matter.

By Mr. Littman:

Q. Did Mr. Zinder or Mr. McAllister tell you that you should not make any more inspections than you had planned to make? A. No.

Q. You were a free agent with respect to the number of inspections that you wanted to make, were you not?

A. Yes.

Q. For your purposes? A. Yes.

Q. And they were not telling you how many you would require for your purposes, were they? A. No.

Q. And you were not telling them how many they required for their purposes? A. No.

Q. Do you know the purposes, if any, to which they [fol. 4096] expect to put the inspections that they made?

A. Only what would be a natural supposition. So far as knowing, no, I do not know.

Q. Of course, the number of inspections that are made would be largely governed, would it not, by the uses or purposes to which the person who makes them intends to put them, isn't that correct?

A. It might well be.

Q. Well, now, was the word "sampling method" used in this conversation, to the best of your recollection?

A. Yes, it was.

Q. Who used it?

A. I did.

Q. Of course, you considered the inspection points which you had selected as adequate sampling for your purposes, did you not?

A. Yes, sir.

Q. I think you stated another 50 inspections were selected by you in addition to those which you first made on the map at the conference, is that right?

A. Another 25 or 30, as I now recall it.

Q. I believe you have stated that the Federal Power Commission representatives took no part whatever in the selection of those additional points, is that right?

A. That is correct.

[fol. 4097] Q. Now, are you undertaking to draw any inference or inferences from the fact that the Commission representatives did not object to what you did at any time, either at the inspection points or at the time when the inspection points were selected?

A. No, I am not drawing any inferences. I am merely testifying here.

Q. You would not say that it would be proper to conclude that there was an agreement, necessarily, as to anything simply because representatives of the Federal Power Commission were present and did not object to those things which you did? You would not interpret that to be an agreement, necessarily, would you?

A. No, not necessarily.

Q. So that we may be perfectly clear about this, I believe you mentioned that representatives of the Federal Power Commission took some soil samples at each of the inspection points, did you not?

A. Yes, sir.

Q. You did not object to that, did you?

A. Certainly not. They can have all the soil they wanted from around there—

Q* (Interposing) That is right.

A. (Continuing) So far as I was concerned.

Q. And you would not consider it proper for anyone to [fol. 4098] conclude from your failure to object that you agreed to the use to which the Federal Power Commission's representatives will put those samples?

A. Hardly, no.

Q. I believe you said you had about 50 points selected on the map when you came to the conference in Kansas City on August 2, that you selected some additional points. Why were additional points selected?

A. So as to embrace the total number which I originally had in mind to be inspected. I simply allowed I would select about two-thirds of them and allow engineers of the Federal Power Commission to select the other third.

Then, when they did not care to make the selection, I went ahead and completed the number.

Q. Then you went into the field to make the inspections with Mr. Bodner and Mr. Shattuck, and I believe you have described, in some detail, what each of you did.

Now, you referred to Mr. Shattuck as being Mr. Bodner's secretary, I think, on one occasion. You did not mean to infer from that statement that Mr. Shattuck did not get into some of the inspection holes?

A. I do not think I referred to him as being Mr. Bodner's secretary at all, and I distinctly stated that I thought that he had been in a number of the inspection holes, but that the general rule was that Mr. Shattuck kept [fol. 4099] the records and Mr. Bodner did the work in the holes. That was the substance of my statement in that respect.

By Mr. Lattman:

Q. You testified at Page 3663 of the transcript:

"Now, in general, Mr. Bodner made the actual inspections of pipe and Mr. Shattuck made the notations directed by Mr. Bodner to be made. In other words, Mr. Shattuck generally kept the records and Mr. Bodner generally made the direct inspections of the pipe."

Then you made a further answer that doesn't relate to this particular point.

Isn't it a fact that Mr. Shattuck checked numerous measurements of pits, particularly at times when there was some disagreement as to the precise measurement of pits?

A. Mr. Shattuck did check numerous times, certainly. I have not precluded him from inspecting quite a number of times by making the observation that the general practice was for one man to make the observations on the pits and the other one to keep the records on it.

I am not trying to belittle the activities of Mr. Shattuck in that respect. I simply, in response to a question, stated what the general practice was. I did not keep a record as to how many holes Mr. Shattuck went into. It was not any of my business.

[fol. 4100] Q. You, as a matter of fact, do not know what representatives of the Federal Power Commission were doing, other than that which you saw them do, is that right?

A. Why, certainly that is right.

Q. That is, you did not know what was being recorded by them on their inspection sheets because you did not see their inspection sheets?

A. I never saw their inspection sheets. I do not know what they recorded on them.

Q. You did hear them call out pit depths and certain other observations that were made, did you not?

A. I did hear them call out pit depths and locations up on the pipe and I did see Mr. Shattuck making notations as Mr. Bodner called them out.

Q. Now, I believe your counsel was making some point about your not having seen the inspection sheets of representatives of the Federal Power Commission.

Now, you have testified, have you not, that you have never requested a copy of them, is that correct?

A. That is right.

Q. And you did turn over photostat copies of your inspection sheets to representatives of the Federal Power Commission, did you not?

A. Well, I made copies of mine available through some method. I have forgotten whether it was photostat or no., but I made copies available to them.

[fol. 4101] Q. And that was done only after request, was it not?

A. That is right.

Q. In other words, neither of you were necessarily supplying data to the other except upon request, is that right?

A. That is right and I have not asked for anything.

Q. The Trial Examiner, during the course of your re-direct examination asked you whether or not the relations between the representatives of the Commission and yourself were harmonious or otherwise, and you stated at Transcript, Page 3680, as follows:

"They were absolutely harmonious. The relations were very friendly. I do not know of anything about which there was any disagreement throughout the trip."

Now, I want to make certain that I understand what you mean by the term "Disagreement." You are not inferring from that statement that there was an agreement as to what would be observed or the use to which any party was going to put the data?

A. No, sir. I mean only just what I said, that we did not have any disagreements. No matters arose about which we had argument and disagreement in connection with the work. We might have had some differences of opinion about political matters and social subjects and disagreed on those, but as to our work, we had no matters of disagreement.

[fol. 4162] By Mr. Littman:-

Q. There were some disagreements with respect to pit measurements, were there not, Mr. Biddison?

A. I would not say there were disagreements with respect to them. There were some occasions upon which the measurement of one party did not check with those of the other, and I think upon one or two occasions, some attention was called to that fact, but there was no attempt by either party to reconcile those measurements, although there were times at which one party or the other rechecked measurements if some comment had been made by the other that they did not check the figure.

Q. In other words, the observation record made by yourself and by the Federal Power Commission's representatives do not represent any agreed figures, do they?

A. No, sir, they do not. Each party put down the ob-[fol. 4163] servations as he saw them without regard

to anybody else's opinion on the matter. It was seldom that any opinion was expressed but there were some occasions that the calling out of pit depths disclosed that the two parties making measurements had not gotten the same result.

[fol. 4105] Mr. Littman: I desire, if your Honor please, to make a very brief statement with respect to these inspections.

I think our position can be made clear in this fashion.

It was kind and courteous of Panhandle Eastern to invite representatives of the Federal Power Commission to accompany Mr. Biddison on his inspection tour and, of course, we appreciate that.

It meant a matter of saving time and expense. I do not want anything that I have said to be construed otherwise.

We entered into no agreement with Mr. Biddison with respect to what he should do or how he should do it. He was a free agent and I believe the testimony now is clear that we were free agents, each of us, utilizing the data [fol. 4106] in the manner in which we best see fit.

I am making this statement here simply because I think it would be unfortunate if counsel or anyone else were to endeavor to claim that we agreed necessarily with Mr. Biddison's method of doing things simply because we accompanied him on his inspection trip.

[fol. 4113] RUFUS M. SMITH, a witness, having been previously sworn, resumed the stand and testified further as follows:

Cross-Examination.

By Mr. Littman:

Q. Mr. Smith, you prepared Exhibit No. 30, did you not? A. Yes, sir.

Q. Now, on Pages 1 and 2 of this exhibit, you state your qualifications and experience, do you not?

A. Yes, sir.

Q. Now, on Page 2, you state that "my duties as geologist for Panhandle Eastern Pipe Line Company have required me at all times to keep in close touch with development and producing conditions in the areas in which Panhandle Eastern owns reserves; watch the performance [fol. 4114] of the wells in those fields; and advise the management with respect to its producing operations," do you not?

A. That is true.

Q. Now, will you elaborate on your duties and give us a more detailed statement as to what you do?

A. Well, in keeping in touch with the development and producing conditions in the areas in which Panhandle Eastern owns reserves, we receive copies of logs of wells that are drilled by other companies and they are studied.

We receive sets of sand cuttings or samples from numerous wells drilled by other companies. These are filed and studied from time to time.

Q. What else do you do?

A. We make studies in regard to various conditions in this field, such as the location of water below the producing formations, the location of the first producing formations and the subsequent formations which produce gas.

Pressure maps, of course, are made, as we constantly watch the decline of the rock pressure in the field.

Q. Who is your immediate superior?

A. Mr. H. W. Pope.

Q. What is your official title? A. Geologist.

Q. What is Mr. Pope's title?

A. Superintendent of Land, Lease and Production.

[fol. 4115] Q. Is it a part of your duties to determine what acreage shall be acquired by Panhandle Eastern Pipe Line Company?

A. I am consulted on that, often times.

Q. Who consults you on that? A. Mr. Pope.

Q. Who makes the ultimate determination as to whether a lease should or should not be acquired, you or Mr. Pope?

A. Mr. Pope, in conjunction with the management of the company, Mr. Neuner and others.

Q. And is the same true with respect to acreage that is abandoned or disposed of? A. Yes, sir.

Q. In other words, Mr. Pope calls you in for consultation? A. That is true.

Q. But he makes the ultimate decision?

A. That is true.

Q. In conjunction with the management?

A. I merely recommend.

Q. And what is the fact with respect to well locations, and by that, I mean locations at which wells are to be drilled?

A. When ~~the fields~~ are such as they are, well locations are usually made more on lease requirements than most anything else.

Q. Who makes the ultimate determination with respect [fol. 4116] to the drilling location?

A. The same gentlemen, Mr. Pope and the others.

Q. Are you called in to consult with the others, as well? A. Make recommendations.

Q. Have you ever advised the company as to the gas reserves in acreage which it owned or contemplated leasing?

A. In a general way.

Q. When did you make such an estimate last?

A. I say in a general way; by that, I mean relatively. If there are several tracts which are available, one might be a better one to obtain than another by its location in respect to the field boundaries, so it would be a relative proposition, rather than a specific reserve per acre.

Q. In other words, your estimates in that connection would not be that you have concluded that so many cubic feet of gas will be found in any particular acre, is that right?

A. That is true.

Q. Have you ever made such an estimate for the company as that which I have just described? That is, a given estimate of reserves per acre or for a number of acres?

A. Yes, I have.

Q. When did you last do that?

A. I made up an estimate of that kind within the past two months.

[fol. 4117] Q. Are you speaking of the estimate that is contained in Exhibit 30?

A. There is one made since then for the company.

Q. Will you please give us a general description of the estimate?

A. It conforms practically to the figures which I used in Exhibit 30, practically the same per-acre figures as are used in Exhibit 30.

Q. Does it look like Exhibit 30, that is, I am referring to the estimate?

Mr. Culton: I am wondering if counsel really understood what he meant.

Mr. Littman: Perhaps I didn't.

Mr. Culton: He said he used the same per-acre figure that he used in Exhibit 30.

By Mr. Littman:

Q. Did the estimate which you just made and submitted to the company show the reserves based on the eight different abandonment pressures used in Exhibit 30?

A. It was not a total figure. It was merely a per-acre figure. That was given to the accounting department for, I believe, their setting up some records in which the reserves will be depleted annually under each separate lease according to the production which comes out of each separate lease.

Consequently, the reserve for each lease was calculated [fol. 4118] from the average per-acre reserve figure times the number of acres in the lease.

The abandonment pressure used there, I believe, was 50 pounds.

Q. In other words, if I understand you correctly, your most recent estimate submitted to the company stated that the original amount of gas per acre was 17,700 M.c.f. for what you have designated as Class 1 acreage and 5,000 M.c.f. for acreage classed as Class 2?

A. Yes.

Mr. Culton: In which field?

Mr. Littman: In the Texas Panhandle Field.

By Mr. Littman:

Q. Incidentally, we are talking about the Texas Panhandle Field, are we not? A. I assumed that.

Q. Inasmuch Exhibit 30 relates solely to that field?

A. Yes.

Q. Perhaps it would be well to have that understanding at the outset.

Mr. Culton: I thought the record should be clear that that is what we are talking about.

Trial Examiner: It might be inquired at this point, however, whether Mr. Smith is thoroughly familiar with the Hugoton Field also.

[fol. 4119] By Mr. Littman:

Q. Are you familiar with the Hugoton Field?

A. Yes, sir.

Q. Thoroughly familiar with it, as the Trial Examiner has inquired?

A. There may be some question about what thoroughly means.

Mr. Culton: I think we stated during the examination that both Mr. Smith and Dr. Bartle had worked together in connection with the Hugoton Field but, in order to expedite the evidence, we had had Mr. Smith prepare the figures for the Panhandle Field and Dr. Bartle prepare the figures for the Hugoton Field.

Trial Examiner: I assume, Mr. Smith, your duties are equally in the two fields now?

The Witness: Yes, sir.

By Mr. Littman:

Q. Do you have your acreage map for the year 1932 which has been identified in this case as Exhibit 19?

A. No, I do not.

Mr. Culton: We did not know what maps you wanted to examine him about. You had copies of them. There was no reason for us to anticipate—

Trial Examiner: Mr. Smith, here is a copy of that map.

(Whereupon, a copy of the map referred to was handed the witness.)

[fol. 4120] By Mr. Littman:

Q. Now, on this map, which has been identified as Exhibit 19, you show in colors the acreage controlled by Panhandle Eastern Pipe Line Company as of March 31, 1932, do you not?

A. That is true.

Q. Now, does that include the acreage which was subject to gas purchase contracts or does it just include the acreage which was held by Panhandle Eastern?

A. There is no gas purchase contract acreage shown.

Q. There was some acreage, however, subject to gas purchase contracts as of March 31, 1932, was there not?

A. I believe that there was one or possibly two, gas purchase contracts at that time.

Q. But that acreage you have stated is not shown on that map?

A. It would be a very small amount, possibly 1,280 acres, or some such matter.

Q. What is the purpose of this map which has been identified as Exhibit 19, Mr. Smith?

A. It was prepared to show the difference between the acreage picture in the early history of Panhandle Eastern Pipe Line Company as against the present acreage pattern of Panhandle Eastern in Texas Panhandle.

Q. Did you use this map in connection with making your estimate of the reserves in the Panhandle Field?

[fol. 4121] A. No, sir.

Q. You did not submit a map showing the situation as of 1933, did you? A. No, sir.

Q. Or as of 1934, 1935 or subsequent years?

A. No, sir, only 1941.

Q. 1941. Why did you select 1932 rather than 1933 or 1934, or some other year?

A. 1932 was approximately the time Panhandle Eastern began taking gas from this area.

Mr. Littman: If your Honor please, perhaps it would be well for us to note our objections to the exhibits as we discuss each, in order that your Honor will have in mind the objection in connection with the particular testimony as the testimony is given.

We object to this exhibit for the reasons stated by the witness, that it serves no useful purpose in this case other

than to clutter up the record. It was not used by this witness in arriving at his estimate of reserves and merely shows the acreage picture as of some nine years ago, and it has no bearing whatever upon the issues involved in this proceeding.

We think that while it is harmless, to use your Honor's term, it does unduly encumber the record, and we are very anxious that no needless exhibits be in the record, and we feel it our duty to object on the ground of immateriality.

[fol. 4122] We shall note our objections to these exhibits as they are discussed.

Trial Examiner: Very well.

By Mr. Littman:

Q. Now, will you please turn to your next exhibit, which has been identified as Exhibit 20, this exhibit being named, "Present Acreage Map."

Mr. Smith, I do not believe you have stated in your testimony, and I do not believe you show on this map, as of what date the map speaks, and I would appreciate it very much if you would tell us the date.

A. That was an oversight. It should show as of June 30, 1941.

Q. And the legend on the map merely shows, does it not, the ownership of the leases indicated? A. Yes, sir.

Q. Very well. Now, if you will please turn to Exhibit 21, which appears to be a contour map. I will ask what you conceive to be the purpose of this map?

A. It shows the location of the Amarillo Gas Field in the Texas Panhandle and the subsurface structure of said gas field.

Q. Would you give us a concrete example of these elevations and tell us what is indicated on the map?

A. The map indicates that the top of the Wichita [fol. 4123] Albany Anhydrite would be found on the John Ray Dome at 1500 feet above sea level, the John Ray Dome being located in north central Potter County.

Q. That sand which you have just named is one of the producing sands, is it? A. No, it is not.

Q. What is it?

A. It is a marker that is used by geologists in determining whether or not the formation is running high or low and, in a way, predicts the quantity of the gas to be obtained after the well is completed.

Q. Don't these contours show the elevations above sea level of the top of the Panhandle Lime? A. Yes, sir.

Q. Is the Panhandle Lime another name for that structure which you just gave a moment ago?

A. The Panhandle Lime is another name for Wichita-Albany. However, the top of the Panhandle Lime is not productive and the Panhandle Lime is really not a lime.

The top of it isn't. It is an Anhydrite.

Q. Now, the contours that you are measuring on this map are measured from the top of a structure, are they not?

A. It indicates the contours found on the structure and, roughly, gives you a picture of what the structure [fol. 4124] looks like with a high point over here (indicating), another higher point at another place on the map and it slopes toward the flanks with the fault at the south side.

Q. Well, what does that have to do with the producing structures?

Mr. Culton: Counsel, if you would use the words "producing formation" instead of "producing structure," you would be talking some language that the witness could understand.

The structure does not produce. It is the formation that produces.

Mr. Littman: Well, I used the term "producing sand" or "sands" a moment ago.

Mr. Culton: That is all right.

By Mr. Littman:

Q. I understand there are various terms for these things. Which would you prefer to use, Mr. Smith?

A. Sands or formation, either is proper.

Q. Sands or formation, very well.

Will you please explain what relationship these contours have to producing sands in the Panhandle Field?

A. It indicates the underlying producing structure.

Q. Does one conform with the other?

A. Substantially.

Q. The thing that disturbs me is, Mr. Smith, and I do not clearly have in mind, is how far above the producing [fol. 4125] sands are these elevations that you have shown on this map?

A. Approximately 800 feet.

Q. And the convolutions of the one are followed generally by the other?

A. That is true. This is a good marker for that reason. This has been selected and has been used for years to make contour maps on structures in the Panhandle of Texas.

Q. I see. Will you please state what relation exists, if any, between the elevations shown on your contour map, Exhibit 21, and the gas reserves in the Panhandle Field?

A. The principal relation between this contour map and the gas reserves in the Panhandle of Texas is that, generally speaking, the above-average producing acreage is found on the high points of the structure and the below-average producing acreage is found on the edges of this structure.

Q. Now, do I understand your testimony then to be that acreage located near the top of the structure is more favorably located for production of gas than acreage located on the lower parts of the structure?

A. Generally speaking, that is true. However, there are numerous exceptions to that rule.

Q. But that is a general rule, is it not?

A. That is true.

Q. Now, I believe you testified in your Exhibit 30 that the leaseholds of Panhandle Eastern Pipe Line Company [fol. 4126] are, "favorably located for the production of gas", did you not?

A. Yes, sir.

Q. And that testimony, I take it, is predicated upon the fact that Panhandle Eastern's acreage is, in fact, located along the top or near the top of this structure?

A. That is true, generally speaking.

Q. Now, you do not show on this map the location of Panhandle Eastern's acreage and so I shall ask you to

state, generally, the location of Panhandle Eastern's acreage with respect to the contours of this map.

(Whereupon, the map was handed the witness.)

Mr. Culton: Is that the same map now?

The Witness: Yes.

Acreage controlled by Panhandle Eastern Pipe Line Company in Carson County, lies generally above the 1300-foot contour. In Potter County and southern Moore County, Panhandle Eastern Pipe Line Company's acreage lies generally above the 1100-foot contour. Is that sufficient?

By Mr. Littman:

Q. Isn't there some acreage located above the 1500-foot contour, Mr. Smith?

A. Yes, sir, there is.

Q. Approximately how much, roughly?

A. Probably 1000 acres.

Q. I note in your 1941 acreage map to which we referred [fol. 4127] a moment ago, Exhibit 20, there were numerous open spaces in the Panhandle Eastern's acreage, and by that I mean, a kind of checker-boarding situation that exists. Is that generally correct?

A. That was explained, to a certain extent, in my testimony, that Panhandle Eastern originally designed their acreage pattern when the field was new, to make a checker-board pattern that way, so as to at least have some of the better acreage, if not all, even though they might have to surrender some of the poorer acreage at a later date.

Then, as time went on, an attempt was made to obtain more premium acreage, so to speak. However, it was impossible by that time, to acquire solid blocks. That, I think, explains the so-called open spaces in our acreage pattern now.

Q. Now, having in mind the situation which you have just described and the generally favorable location of Panhandle Eastern's acreage, what would you say with respect to the desirability of Panhandle Eastern's acreage in so far as drainage is concerned?

A. I would say it was in an average position.

Q. With respect to those open portions representing leases that are owned by others, do you know whether or not there are offsetting wells on those leases, generally?

A. In a great many cases; there are.

Q. And in many cases, there are not?

[fol. 4128] A. I would say in a few cases there are not, but in the majority of the cases, there are offsetting wells.

Q. Now, the fact that Panhandle Eastern's reserves are situated near the highest structural point of the entire Panhandle Field would indicate that Panhandle Eastern's acreage would be among the last to be ultimately abandoned, isn't that correct? A. Not necessarily.

Q. Well, I have in mind, particularly, encroachment of water. Wouldn't the fact Panhandle Eastern's reserves are located along the highest structural point be a favorable factor in that regard?

A. That would probably be true, except for a, you might say, unnatural condition, or maybe an unexpected condition, which apparently is developing on the northeast portion of the field.

It appears now that water is coming in rather rapidly in east central Moore County. You might call it a finger appears to be projecting itself southwestward through that portion of the field.

Q. So that the acreage that is in the path of this encroachment and which is located along the lowest structural points will be the first to be abandoned for that reason? A. Yes, sir.

Q. And those which are located along the top of the [fol. 4129] structure will be the last to be abandoned?

A. They will be later.

Q. Yes. Is this water encroachment to which you have just referred encroaching upon the Panhandle Eastern's acreage?

A. Yes, sir, and it has made itself evident in the last two and three years.

Q. Has Panhandle Eastern abandoned any operated leases by reason of that? A. No, sir.

Q. Has it abandoned any other leases by reason of it?

A. No, sir, not up to the present time.

Q. When you state that Panhandle Eastern's acreage is favorably located for the production of gas, does that, or

does that not mean that greater production per pound of drop in rock pressure will be obtained than on the average in the field?

A. Yes, I think it indicates that greater production per pound drop will be produced from above-average acreage than average or below-average.

Q. Is that due to migration or due to the fact that the acreage had more gas under it to start out with?

A. I would say, due to the fact that it had more originally.

Q. Now, if you will look along toward the top of the map which indicates the north, you will observe two of your contour lines which are marked 900 feet. I notice that they [fol. 4130] do not join. If you had extended this map further to the north, would you have joined those two contour lines somewhere?

A. I think you will find on another exhibit that those lines are dashed up there as probably being located there, but not positively being located at that position.

Q. Can you give us the number of the exhibit to which you have just referred?

A. I think it is the 1941 rock pressure map.

Mr. Culton: We have no 1941 rock pressure map in Texas.

The Witness: No; but it does show the outline of the field, I think, Mr. Culton.

Mr. Culton: Mr. Smith, will you state just exactly what you are pointing out to counsel, and from what map you are pointing?

The Witness: On Exhibit 27 which shows the outline of the Texas Panhandle Field as well as the approximate outline of the Hugoton Field, north of the north line of Moore County, the lines outlining the field are dashed rather than solid, due to the fact that the exact location of the boundaries of the field are not known.

By Mr. Littman:

Q. Now, do these dashed lines on Exhibit 27 represent the 900-foot contour?

A. Approximately. However, this is not a contour map and merely attempts to show the approximate outline of the field.

[fol. 4131] Q. Now, I gather from your testimony, Mr. Smith, that there is considerable doubt as to where the Panhandle Field ends up at the north and where the Hugoton Field begins. Is that a correct statement?

A. There is considerable doubt as to whether the two fields join at all.

Q. And why is that a matter of doubt?

A. Because there has not been sufficient development up to date to prove whether it does join or does not join.

Q. You mean to say, there has not been sufficient drilling, when you speak of development?

A. Yes, sir.

Q. Before we leave Exhibit 21, I note you have a line running diagonally like that is designated "A" at one end and "A'" at the other.

Mr. Culton: A'.

By Mr. Littman:

Q. "A" and "A'".

A. That indicates a location of a cross section which appears in a later exhibit. However, the cross-section is generalized and does not intend to show exact conditions existing along this A-A' line.

Q. Well, we will get to that in just a minute. I believe that typical structure which you have just referred to appears in your next exhibit, which is numbered Exhibit No. [fol. 4132] 22 and we will come to that very shortly. That is why I wanted you to make it clear that your cross-section is supposed to represent this line, is it not, which you have referred to as A-A'?

A. Roughly. However, I do say that the cross-section has been generalized and does not pretend to show exact conditions existing along that A-A' line.

Q. I notice that the A-A' line does not run through very much of your Panhandle Eastern acreage, does it?

A. No, it does not.

Q. Is our understanding correct, that it misses the bulk of Panhandle Eastern's acreage and actually goes through perhaps two or three leases, is that correct?

A. That is true. However, we did not prepare the cross-section to show conditions existing under Panhandle Eastern's acreage or conditions existing under any particular acreage, but merely to give an idea, in a general way, of

the conditions that exist in the Panhandle Field below the surface.

Q. Suppose we have a look at Exhibit 22, which is the "Panhandle Cross-Section" and perhaps we can then better discuss the situation from that.

Trial Examiner: May I ask at the outside, Mr. Smith, whether your chart marked for identification as Exhibit 22 is prepared on commercial print?

The Witness: No, sir, this is not commercial print. It [fol. 4133] was prepared in our drafting room, but was partially taken from a text book.

Mr. Culton: Give the Examiner the name of that text-book.

The Witness: "Geology of Natural Gas", which was edited and compiled by Henry A. Ley.

Mr. Culton: Was that also in Cotner and Crum's article in Geology of Natural Gas?

The Witness: An article in that Geology of Natural Gas book just referred to, written by Cotner and Crum, contained a cross-section similar to this one in the exhibit.

By Mr. Pittman:

Q. Now, you stated that this cross-section was taken, in part, from the source which you named and was prepared, in part, in your drafting room.

Would you mind stating for us which part was prepared in the drafting room and which part was prepared from the sources which you named?

A. The general print was copied almost exactly from the textbook. The coloring was put on to show generalized conditions existing in the Panhandle Field.

Q. Did you designate how these colors should be put on this map? A. Yes, sir.

Q. But you did not personally prepare the printed portions of this map?

[fol. 4134] A. No, it was prepared in our drafting room.

Q. But from the source that you named?

A. Yes, sir.

Q. Mr. Peterson—was that the name?

A. No. It is taken from an article written by Cotner and Crum appearing in Henry A. Ley's book, "Geology of Natural Gas", published by the American Association of Petroleum Geologists.

Mr. Wheat: Do you know the date, approximately?

The Witness: I do not remember, exactly, the date. I have a copy of the book at the hotel and will be glad to bring it over and show it to you gentlemen if you like.

By Mr. Littman:

Q. Mr. Peterson did not have anything to do with this map?

A. No, sir. I assume you refer to Mr. Peterson with the Texoma Natural Gas Company?

Q. Yes.

By Mr. Littman:

Q. Do you have before you Exhibit 22, "Panhandle Cross-Section"?

A. Yes, sir.

[fol. 4135] Q. Is that an actual cross-section?

A. No, sir.

Q. What does it represent?

A. It is a generalized cross-section representing typical conditions existing in the Amarillo Field in the Texas Panhandle.

Q. What is the horizontal scale of this cross-section?

A. I do not know.

[fol. 4136] By Mr. Littman:

Q. Can you state, Mr. Smith, the point on this cross-section where the well, for instance, where this well is located that you have shown on this cross-section?

Trial Examiner: Isn't there some relationship between the structures shown in Exhibit 21 for identification and Exhibit 22 for identification?

The Witness: Yes, sir, that was brought out by a question by Mr. Littman.

Trial Examiner: If you follow through that relationship, wouldn't you give us some information of importance with reference to Exhibit 22 for identification?

The Witness: Exhibit 21 shows the location of the John Ray Dome in north central Potter County. The location of John Ray Dome is also shown on the cross-section on Exhibit 22.

By Mr. Littman:

Q. Pardon me; where is that shown?

A. At the upper left-hand corner of the map, or rather the cross-section.

Q. Where is this well that is shown on this typical cross-section located?

A. The approximate location of the well shown on the typical cross-section is where the line A-A' crosses the Moore-Hutchinson County line.

[fol. 4137] Q. Well, is that an actual well?

A. No, sir. There are wells which exist there.

Q. But the well shown on this cross-section is a hypothetical well?

A. That is true.

Q. You could not tell me, for instance, where the point on the cross-section which is located, let us say, two inches to the right of this hypothetical well is located on any map, could you?

A. Approximately.

Q. But not exactly?

A. No, sir.

Q. Can you give us the name of the wells which establish the various elevations shown in this so-called cross-section?

A. No, sir; I cannot definitely. However, there are numerous wells which exist along the line A-A' which might have been used in establishing this cross-section.

Q. You do not have any personal knowledge of that, do you?

A. No, sir. The principal reason we made an exhibit of this kind, Mr. Littman, is that I could have made a detailed cross-section using actual wells which exist in the Amarillo Field, but time was so short we did not have sufficient time to make an exhibit of that kind. Consequently;

[fol. 4138] we generalized a cross-section which was already available.

Q. Can you testify from your own personal knowledge that the situation which is shown to exist at the point where this hypothetical well is shown on this cross-section actually prevails as it is shown here?

A. I cannot tell you where it does actually prevail. However, there are probably dozens of wells in the Texas Panhandle where such a condition does exist.

Q. Do you mean to say there is in existence a well whose log will show exactly the situation which you have shown at the point indicated by the hypothetical well?

A. I believe there are.

Q. You cannot give us the name of any such well, can you?

A. No, sir.

Trial Examiner: May I ask about your Exhibit 21, whether 900-foot contour, with possible exceptions, represents the outer boundary of the productive area?

The Witness: Not necessarily.

Trial Examiner: Is there a relationship?

The Witness: Only in this way, that the 900-foot contour is getting rather low on the structure. However, you will notice in Exhibit 21 that wells appear outside the 900-foot contour in northwestern Moore County, and also appear outside the 900-foot contour in northwestern Hutchinson County.

[fol. 4139] Mr. Culton: Mr. Examiner, in view of the Examiner's question a while ago, I desire to present for his inspection the Cotner and Crum drawing from which this was taken, showing there is no horizontal scale shown.

The witness can testify that is the one from which he got the cross-section.

(Whereupon, a book was handed the witness.)

By Mr. Littman:

Q. Now, the drawing to which Mr. Culton has just referred does not seem to me to resemble very closely the drawing which is shown in Exhibit 22.

Mr. Culton: I would like to ask the geologist if he thinks it resembles it.

Mr. Littman: I was just going to ask him.

Mr. Culton: Ask your own geologist if it resembles it.

The Witness: It was taken directly from this cross-section printed in the article referred to.

Trial Examiner: Mr. Smith, your answer does not relate to anything preceding it in the record. You are now referring to Exhibit 22 for identification and the work to which Mr. Culton made reference and the statement you have just made relate to the cross-section which was previously discussed. Is that right?

The Witness: I mean by the article referred to, the book titled, "Geology of Natural Gas" edited by Henry A. [fol. 4140] Ley, published by the American Association of Petroleum Geologists at Tulsa, Oklahoma, in 1935, in which an article appears entitled, "Geology and Occurrence of Natural Gas in Amarillo District, Texas", by Victor Cotner and H. E. Crum, beginning on Page 385.

Mr. Culton: Where is the cross-section? Is it paged?

The Witness: The cross-section appears on the back of Page 387—it is actually Page 388.

Trial Examiner: Following up the question I asked a moment ago, you say there is gas production outside of the area defined by the 900-foot contour?

The Witness: Yes.

Trial Examiner: Referring now to Exhibit 21 for identification?

The Witness: Yes, sir.

Trial Examiner: Is it the general agreement or consensus among geologists and the practical gas men in the field as to the location of the 900-foot contour?

The Witness: At the time this map was made, Exhibit 21, that was the location of the 900-foot contour, as near as could be placed.

However, subsequent drilling may have revised the location of that 900-foot contour.

Trial Examiner: These contours are under constant revision, are they not?

[fol. 4141] The Witness: Yes, sir.

Trial Examiner: What would you say as to the situation now? Do the contours shown on your Exhibit 21 for identification represent the consensus among gas men in that area at the present time?

The Witness: In a general way.

Trial Examiner: What do you mean by that?

The Witness: I mean by that, that there has been no great revision of the general idea of this geologic structure in the past five or six years.

Trial Examiner: Has the exploration that has occurred in the last five or six years resulted in any marked extensions?

The Witness: Only to the northwest.

Trial Examiner: How extensive have those been?

The Witness: I believe that it has extended the field probably three to five miles.

Trial Examiner: That would involve a very large acreage, would it not?

The Witness: Quite a bit.

Trial Examiner: It would run into thousands of acres, would it not?

The Witness: Yes, sir.

Trial Examiner: And that process of exploration outside of proven gas fields is still continuing, is it not?

[fol. 4142] The Witness: Yes, sir.

Trial Examiner: Would you say that in any direction from the proven fields, the tests have been sufficient to eliminate further extension of the present proven fields from the standpoint of production of gas?

The Witness: The field is fairly well defined by production and dry holes at the present time. However, it might be extended to the northeast by small wells, to the northwest, but I do not believe it will be extended to the south any further than it is presently known.

Trial Examiner: How old is this field at the present time?

The Witness: Approximately 15 years.

Mr. Littman: You were speaking of the Texas Panhandle Field, were you not?

The Witness: Yes, sir.

Trial Examiner: Will you pardon the interruption, Mr. Littman?

Mr. Littman: I am glad to have you interrupt at any time to clear up any points of uncertainty.

By Mr. Littman:

Q. Mr. Smith, are the red blotches shown on this cross-section meant to indicate the precise location of gas?

A. No, sir.

Q. What do they indicate, if anything?

A. Typical locations of gas.

[fol. 4143] Q. I notice that one of those red colors goes into the Pre Cambrian and Granite on the left-hand side of this cross-section. Is there any gas to be found in the Granite?

A. Only in crevices.

Q. And that is what you meant by the red crayon?

A. Yes.

Q. You do not have any reference to any particular existing crevice at that point, do you?

A. No, sir.

Q. And that is true of your other colors, it is?

A. Yes, sir.

Q. You state at Page 9 of Exhibit 30, in the first paragraph that production from any of the horizons shown in Exhibit 22 has a direct effect on all other producing formations in the reservoir.

What do you mean by that statement, Mr. Smith?

A. I was trying to find the sentence to which you are referring.

Q. In the first paragraph on Page 9, the third sentence: "Necessarily, therefore, production from any of the horizons shown has a direct effect on all other producing formations in the reservoir."

Do you find that statement?

A. Yes, sir. I mean by that, that generally speaking, there is a connection between all producing formations, [fol. 4144] whether it be gas or oil which I have attempted to illustrate on Exhibit 22.

Q. Do you mean that the gas in this field is contained in a common reservoir?

A. Yes, sir.

Q. Now, this cross-section is not typical of the entire Panhandle Field, is it, Mr. Smith?

A. I would say it was.

Q. Isn't it typical only of the cross-section indicated by line A-A' in your Exhibit 21?

A. To a certain extent, that is true, but by the placing of this color on there, red for gas, green for oil and blue for water, I have attempted to show most of the conditions which exist in various parts of the field, in all parts of the field.

Q. But the structure such as you have shown in this cross-section is not the structure that you would encounter in other parts of the field?

A. No, you are right, there.

Q. Is oil being produced by this hypothetical well shown in this cross-section, Exhibit 22?

A. Yes, sir.

Q. Is this well typical of Panhandle Eastern wells?

A. No, sir.

Q. Is my understanding correct that Panhandle Eastern's wells do not produce any oil, is that true?

A. That is true.

Q. Well, is your hypothetical well typical of the wells, generally, in the Panhandle Field?

A. Those which produce oil.

Q. Are there many of those in the Panhandle Field?

A. Yes.

Q. I am talking about the West Panhandle Field.

A. Yes, there are a great many.

Q. There are, but generally, they are located some distance from the Panhandle Eastern's acreage, are they not?

A. The closest wells of this type to Panhandle Eastern acreage are along the south line in the vicinity of Borger, Texas, in Hutchinson County, and northern Carson County.

Q. Now, the structures shown in this typical cross-section are not typical of Panhandle Eastern's acreage, are they?

A. Some Panhandle Eastern acreage occurs very close to a structure similar to this.

Q. However, the cross-section only pierces two or three of Panhandle Eastern's leases, is that not correct?

A. That is correct. However, as I stated before, this is not a detailed cross-section made from actual well logs, but is a generalized or typical cross-section, wherein we intend to show typical conditions existing throughout the [fol. 4146] Amarillo, Texas, Field in the Texas Panhandle.

Trial Examiner: Mr. Smith, you must have some schematic key for the showing of gas, oil and water in the 300 feet immediately above sea level. Would you explain that, referring again to Exhibit 22 for identification?

The Witness: That is the general relationship of oil, gas and water when they occur together, the water being found at the lowest elevation and oil immediately above that and gas above the oil.

Trial Examiner: Do the parallel horizontal lines disregard the structure?

The Witness: Yes, sir, generally.

Trial Examiner: They are meant, then, to indicate the sequence, the lowest being water, the next being oil and the final gas?

The Witness: Yes, sir, generally speaking, in Panhandle Field, water is found very close to sea level elevation, within 100 or 200 feet.

By Mr. Littman:

Q. Well, did you use this cross-section, Mr. Smith, for any purpose in connection with the estimate of gas reserves which you have submitted in Exhibit 30?

A. No, the chief purpose of the cross-section was to enlighten the Federal Power Commission as to the existing conditions in the Panhandle Field.

[fol. 4147] Q. Will you please turn to Page 11 of your testimony in Exhibit 30? In the first paragraph, the first line, you state that the initial pressure of the Panhandle gas field was approximately 430 pounds per square inch at the well head. A. Yes, sir.

Q. Corresponding to a pressure in the producing horizon of approximately 471 pounds per square inch, is that correct? A. Yes, sir.

Q. In that statement, do you refer to the entire Panhandle Field or to the West Panhandle Field?

A. The West Panhandle Field.

Q. Would you, for purposes of this record, tell us the line of demarcation between the West and the East Panhandle Field?

A. Yes, sir. I believe I have an exhibit here which shows that.

On Exhibit 31, the line of demarcation between the East and the West Panhandle Field occurs very close to the right hand edge of the map in central Gray County.

Q. Now, you referred to the initial pressure as being approximately 430 pounds per square inch at the well head?

What degree of tolerance do you allow by using the term "approximately"? I take it that is not an exact figure.

A. That is true. I would say that is the average. How [fol. 4148] ever, some initial well head pressures were as high as 440 pounds, others were as low as 420 to 418 pounds.

Q. How accurate would you say this 430-pound figure is, as an average?

A. I believe that is a good average.

Q. And exact calculation, within 100 pounds, would you say, within 5 pounds, or what?

A. I would say it was within one pound of the average.

Q. Did you make this calculation of the average rock pressure? A. No.

Q. Where did you secure the figure?

A. I secured the figure by having studied well logs and examined Texas Railroad Commission Reports during the past five years.

Q. Did you add the initial rock pressures for a number of wells in the field and then divide by the number of wells? A. No, sir.

Q. Would you give us an idea of how you arrived at it?

A. By observation that the earliest wells that were drilled averaged approximately 430 pounds. I mean by that, wells that were drilled prior to 1930. The well head pressure averaged about 430 pounds.

Q. When was the discovery well drilled in the Panhandle Field, do you recall?

[fol. 4149] A. The discovery well was drilled in 1918 in northern Potter County.

Q. Well, Mr. Smith, I am still not clear as to the precise method whereby you arrive at this figure of 430 pounds per square inch which you have stated is a precise figure with a tolerance of not more than one pound one way or the other.

Is there anything that you could do to clear me up on that? In other words, you say it was not calculated by you and I am still at a loss to know how you arrived at it?

A. Well, let's assume, for instance, that prior to 1930 there [was], say, 100 wells producing gas similar to those connected to Panhandle Eastern Company pipe line.

The majority of these wells were drilled prior to the great withdrawals that the field is subjected to now. Merely by observing the initial shut-in well head pressure, I noted that they ranged from points equally on either side of 430 pounds, and, consequently, selected 430 pounds as the average.

Q. Well, do you have such a list of wells that were producing prior to 1930?

A. I did not say producing. I say, were drilled prior.

Q. Were drilled prior to 1930, I am sorry.

A. I could obtain a list of that kind. I have records which would supply a list of that kind in Kansas City.

Q. ~~You~~ did have such a list when you calculated the [fol. 4150] 430 pounds, did you not? A. Yes, sir.

Q. How many wells were on that list?

A. I do not remember.

Q. Can you give us a general idea?

A. There may have been as many as 200.

Q. But you did not total the initial pressures of those wells and divide by the number of wells, did you, to get a calculated figure?

A. I have arrived at calculations of that. I have had the idea that 430 pounds was the initial pressure for so long, I do not know how long.

[fol. 4151] By Mr. Littman:

Q. Did you select this figure 430 pounds because it is accepted in the industry, or did you calculate it yourself? Let's get at it that way.

A. I selected it partially because it is accepted in the industry, but also partially because of the knowledge I have myself.

Q. You have Exhibit 23, the rock pressure map of 1932?

A. Yes.

Q. To what use did you put this map in arriving at your estimate of gas reserves of Panhandle Eastern in the Panhandle Field?

A. This is one of a series of rock pressure maps which tend to show the rock pressure conditions in the Texas Panhandle Field since the early days of the field.

Q. You say, it tends to show the rock pressure. What do you mean by that? Doesn't it show it?

[fol. 4152] A. Which shows the rock pressures.

Q. Did you prepare this map? A. No, sir.

Q. Who did?

A. It was copied from a map we have in our files, as stated in the testimony.

Q. By a map in your files, you mean the files of Panhandle Eastern Pipe Line Company? A. Yes, sir.

Q. You do not know whose handiwork it is? A. No, sir.

Q. Well, I take it, then, that you cannot personally

rough for the accuracy of the information shown on this map. A. That is true.

Q. Have you ever used this map for the purpose of obtaining a 1932 weighted average pressure of the Panhandle Field? A. No, sir.

Mr. Littman: Before leaving this Exhibit No. 33, if your Honor please, I would like to, as we go along, note an objection to the Exhibit 23 and also to the previous Exhibit No. 22, the Panhandle Cross-Section.

Trial Examiner: Do you wish to develop your objection fully later, or do you wish to do so now?

Mr. Littman: Perhaps I can state very briefly the ground of my objection.

[fol. 4153] With respect to Exhibit 22, the Panhandle cross-section, the witness testified that he did not utilize this cross-section in arriving at his estimate of gas reserves, that the cross-section was not a true cross-section, but was purely a typical cross-section; that even the well shown thereon was a hypothetical well, and that the coloring on the map did not indicate the exact locations of gas, but was shown thereon purely for purposes of indicating where gas might or might not be.

The testimony further shows that oil was being produced by this so-called typical well, and the testimony is clear that Panhandle Eastern's wells do not produce any oil.

The testimony further shows that the cross-section is not typical, that is, the structural portions of the cross-section are not typical of Panhandle Eastern's acreage nor of the entire field, but it is typical only of a line designated as A and A' which pierces only one or two or three leaseholds of Panhandle Eastern.

In short, the cross-section is merely a very pretty picture that might be used in a class room, and I am not at all challenging the sincerity or the earnestness with which this witness is presenting his testimony.

I merely am stating that it has no probative value in this proceeding and would serve no useful purpose, other than to encumber the record.

Now, with respect to the next exhibit, namely, Exhibit [fol. 4154] No. 23, the rock pressure map—1932, this map was not used by the witness in arriving at his estimate of reserves.

It is of unknown origin. This witness does not know who did the job and, so far as we know, no one else knows who gave birth to it.

Mr. Culton: If you do not care about 1932 being in, we have no objection to 1932 pressure map being stricken. It was put in there for just such information as it would give the Commission.

The Witness: There is one thing that has been overlooked, that I want to bring to your attention, that is, all of these rock pressure maps are of both the Hugoton Field and the Panhandle Field.

Mr. Culton: We have no objection to Exhibit 23 for 1932 being stricken so far as the Panhandle is concerned.

We thought the Commission might be interested in seeing the picture that existed at that time.

Mr. Littman: Those, briefly stated, are the grounds for the objection, if your Honor please.

Trial Examiner: Does the statement of the witness that this also includes the Hugoton Field affect the nature of your objection at this time?

Mr. Littman: It does not, if your Honor please, for the reason that the author of this exhibit is unknown and this witness cannot vouch for the accuracy of the information [fol. 4155] contained thereon.

Moreover, it purports to show a situation which prevailed something like nine years ago.

The Witness: Mr. Littman, when I said the author was unknown, that applied only to the Texas portion of it.

Mr. Littman: I am sorry.

Mr. Culton: That is all I had reference to also. There will be plenty of proof as to the Hugoton Field.

By Mr. Littman:

Q. Do you happen to know who the author is of the portion of the map which discloses the Hugoton Field?

A. Yes, sir, it was prepared under my supervision.

Q. That part was? A. Yes.

Q. I see. But you are not testifying here with respect to the Hugoton Field, are you? A. No, sir.

Q. Do you know whether Mr. Bartle made any use of this map in arriving at his estimate?

A. I am quite sure he did.

Q. Well, what is the basis of your information with respect to the rock pressures in 1932 in the Hugoton Field?

A. The rock pressure map of the Hugoton Field which appears on Exhibit 23 was prepared from actual tests made on wells in the Hugoton Field.

[fol. 4156] Q. Was it prepared by you.

A. Under my direction.

Q. Now, you refer to wells. Where did you secure the list of wells that you used for this purpose?

A. From records which we have on individual wells in the Panhandle Eastern offices in Kansas City.

Q. Are those the wells of Panhandle Eastern Pipe Line Company, or are they the wells in the entire field?

A. The entire field.

Q. And those are on file in the offices of the company?

A. Yes, sir. I have a great deal of that data in my work sheets.

Mr. Culton: Could you obtain that information as to Panhandle in 1932?

The Witness: Yes, sir.

Mr. Culton: Did you obtain it?

The Witness: I did not. A lot of our work was done as it was done due to the time element which we had to combat, and we could probably have made our exhibits much more elaborate and much more detailed, had we had more time for preparing them.

By Mr. Littman:

Q. And you would have done so?

A. Yes, sir, gladly.

[fol. 4158] By Mr. Littman:

Q. Who prepared this map identified as Exhibit No. 24?

A. It was prepared under my direction from a Railroad Commission map of Texas.

Q. What part of it did you prepare and what part did the Railroad Commission of Texas prepare?

A. It is merely a copy of the Railroad Commission's map.

Q. The same situation is true with respect to Exhibit 25, rock pressure map of 1939, is it not? A. Yes, sir.

Q. And the same situation is true with respect to Exhibit 26, which is the rock pressure map for 1940?

A. That is true in all cases with Texas but not Hugoton with the exception of 1941, which was prepared, as far as we could, from data that was available at that time from actual tests made by Panhandle Eastern Pipe Line Company.

Q. The 1941 rock pressure map was prepared by you?

A. Yes, sir.

Q. And all of the Hugoton data was prepared by you?

A. That is true.

Q. But so far as the 1938, 1939 and 1940 Panhandle Field rock pressures, those are not yours?

[fol. 4159] A. Those are not mine.

Q. Did you use Exhibits 24, 25 and 26, which are the rock pressure maps for 1938, 1939 and 1940, for the preparation of your estimate in this proceeding?

A. Not directly. As I stated before, they were a series of maps which were prepared to show the isobaric pattern in the Texas Panhandle Field principally because it is a progressive picture and seemed to us to be very enlightening.

Q. Well, you said you did not use these rock pressures directly. What do you mean by that? Did you use these rock pressures indirectly in estimating your reserves?

A. The data on those maps were considered, yes.

Q. By you? A. Yes, sir.

Q. How did they enter into your consideration in estimating gas reserves?

A. I have studied the decline in rock pressure for a number of years and they influenced the method that I used in arriving at the reserve figures in my testimony.

I have studied a great many other things which also entered into the method that I used.

As a matter of fact, the more that you can learn about any field, the more accurately you can estimate the reserves of that field, whether it be rock pressure, overflow, samples [fol. 4160] or what not. They all have their influence in the final judgment of the reserves estimated to be contained in the gas field.

Q. You have reference now, do you, to background knowledge rather than a specific application?

A. That is true. I think that background knowledge is important.

Q. In other words, if I correctly understand your testimony, you did not use these rock pressure maps for 1938, 1939 and 1940, to-wit, Exhibits 24, 25 and 26, respectively, for purposes of calculating the reserves which you estimated, but as a more or less general background knowledge, is that correct? A. That is true.

Q. Now, did you use the rock pressure shown in Exhibit 27 for the year 1941 for purposes of making a calculation of reserves, or did you not?

A. No, it was not used either, directly.

Q. But it was also background knowledge similar to that which you stated for the previous three years?

A. Yes, we are still talking about the Amarillo Field, not the Hugoton Field.

Q. Yes. You did not make any estimate for the Hugoton Field. A. That is true.

[fol. 4161] Q. For the purposes of this proceeding?

A. That is true.

Q. Could you have used the data shown on rock pressure maps, Exhibits 24, 25 and 26 and 27 for purposes of estimating the reserves of the Texas Panhandle Field by the rock pressure decline method? Would they be suitable for that purpose?

A. I do not think so.

Q. Why, Mr. Smith?

A. Because I have experimented with that method and I found that it gave a figure which did not appear to be reasonable.

Q. You mean by the use of the isobars shown on these exhibits which I have just named? A. Yes, sir.

Q. Will you please give me the intervals between the isobars on each of these maps?

A. The isobaric intervals on these maps is 50 pounds.

Q. Do you think that may explain why the information did not prove to be accurate, the fact that the intervals were that far apart? A. No, I do not.

Q. How do you account for the so-called unreasonable figure that you secured by using the rock pressure decline method based on the information contained in these rock pressure maps?

[fol. 4162] A. The chief reason is you cannot arrive at an average present rock pressure.

Q. Can you tell us why you cannot do that?

A. Because it must be a weighted figure, and it is almost impossible to know how to weight it.

Q. Why? What is the reason for that?

A. A weighted rock pressure figure is weighted with respect to acreage. That is, the rock pressure existing in each of these bands is multiplied by the number of acres existing in those bands.

Q. Now, you are referring to the bands on your maps, Exhibits 24, 25, 26 and 27? A. That is true.

Q. Pardon the interruption.

A. Even though you have a great many shut-in well head pressures within those bands, it is still impossible to know just how many acres each one of those wells influence.

For that reason, it is impossible to arrive at an exact figure of the number of acres to use in weighting.

[fol. 4163] C. H. HINTON a witness, having been previously sworn, resumed the stand and testified further as follows:

By Mr. Goodman:

Q. Mr. Hinton, you have stated that planning for a period ahead is a necessary condition in the natural gas business, is that right? A. That is correct.

Q. And you are the man who does a certain element of planning about production, is that so?

A. That is correct.

Q. Is that part of your regular routine? A. It is.

Q. And referring to your regular routine, just how do you go about developing your plans? I mean, give me the routine of it.

A. All right. The first thing is to determine what amount of gas is required for the main line peak day load. The next thing is to determine just what the field conditions are. That is—

Q. (Interposing) Let's stop here at the first thing, Mr. Hinton. The determination of the main line peak load is something furnished to you by some company official, is that right?

A. Mr. Morton usually furnishes that information.

Q. You say he usually furnishes you that information?

A. Yes.

Q. And he furnishes that to you not as a matter of Morton personally, but as a part of an established routine, isn't that so? A. That is correct, yes.

Mr. Morton usually takes the present load and then what new contracts are added to the present load, are added thereto and that is furnished in September or the latter part of August for the start of the planning of the next year's budget.

Q. So that you begin with a regular routine which consists of adding the contract requirements for the ensuing year to the existing contract requirements, and that is furnished to you by Mr. Morton and is a report made of that to the officials of the concern?

[fol. 4167] A. Yes, sir.

Now, the sales are then converted over to the production pressure base, the main line capacity being calculated on 30 inches mercury saturated is about 14.73 pounds and our production pressure base is 16.4 pounds.

Then, we add to the sales the line loss that has been determined through the several years operation and the fuel required to operate the compressor stations on the main line, and that is what we term as the Liberal input, the requirement which is the sales plus line loss plus fuel requirement.

Q. Yes.

Now, you then prepare your estimates concerning the cost of producing the gas necessary to supply this demand, do you not? A. That is true.

Q. Mr. Morton not only gives you the peak demand, but he gives you the volume?

A. That is right, annual.

Q. The annual volume? A. Yes.

[fol. 4169] Q. Do you not, in conjunction with the management then, maintain a certain plan or sketch of the probable future operations? A. Yes, we do.

Q. It has some name, you would have to have some way of identifying it.

A. It is mostly verbal, Mr. Goodman. That is, in a natural gas company, there are many days that the people concerned about the development will get together and talk the matter over, and if it looks as though some information is lacking that should be worked up, why, then, it is worked up.

I do not believe it has any definite name.

Q. I see. So that, as a matter of fact, you cannot show that there is committed to writing any definite plan for the expansion of output beyond the requirements of the next ensuing year, is that right?

A. Up to this year.

[fol. 4170] Q. Well, but I am interested, Mr. Hinton, solely in your regular routines, wholly apart from any rate case.

So far as your regular routines go, you do not have committed in paper any plan of expansion of output beyond the year 1942?

A. As far as I am concerned, our future is usually in the form of a huddle, you might say. We all get together and talk about what we may expect in the next two or three years.

Q. Has that get-together taken place during this year?

A. Yes, it has taken place every year, and many times a year probably.

[fol. 4171] Q. Now, when you speak of your load factor, you have in mind the relationship of your average daily delivery to the peak day, is that right?

A. Yes, that is right.

Q. From what you have said, am I correct, then, in understanding that your future forecasts, as shown in Exhibit 43 and testified to in Exhibit 42, are matters expressly prepared for this case and are not part of the company routine?

A. I believe that would be right, Mr. Goodman. I think that has been one thing that this case has caused us to do that we should not have done heretofore, and that is to make just this kind of study, and the study is just the same for this case as it would be for our future picture, and this will probably be followed very closely all the way through.

Q. Yes, but that is a matter for the management, isn't that so?

A. Well, the management has looked over this plan and they picked a lot of bugs out of it. It has been changed around. This is not the original plan we started off with. We did not make just one study on this and say, "That is [fol. 4172] that." We spent hours on this planning, how we could develop more efficiently, and get the gas into Liberal at a lower cost.

Q. And by "we", to what men besides yourself do you refer?

A. Mr. Pope, Mr. Neuner, Mr. Burnham, and Mr. Creveling and Mr. Morton and Mr. Smith, the geologist.

Q. For the year 1942, you have made a separate estimate of the production requirements and costs wholly apart from Exhibits 42 and 43 here, have you not?

A. Yes, sir.

Q. And what became of that estimate?

A. At this time, it is probably being whipped into shape to present at a budget meeting.

[fol. 4173] Q. In connection with your studies, Exhibits 42 and 43, here, have you developed unit costs paralleling those studies?

A. Not quite paralleling, because we have found, in practically every case, that our present budget figure exceeds the figure which is used in this study here.

[fol. 4174] That is due to an increase in material costs. It is due to increasing labor costs, and I believe that, in every case that I can think of, with one exception, that those costs have been increased.

That one exception is the well which we are drilling in Texas County, Oklahoma, at this time. Due to the fact that it is very hard to get pipe at this time, we are leaving the line out of that well, and the cost of that well has been reduced by that amount.

[fol. 4175] Q. On the first paragraph of Page 4.

"The unit costs for producing and gathering the gas will be substantially higher than those heretofore existing."

That is concluding the first paragraph on Page 4.

A. That is a true statement.

Q. Well, now, I did not ask you that. I asked you if you have produced those unit costs.

A. Showing an increased cost per M. c. f.

Q. That is right.

A. This does not refer to any from one month to the next. It is an overall picture—

Q. (Interposing) I did not ask you that question. You had better read the question.

[fol. 4176] The Witness: As the pressure declines in the fields, it takes more horsepower to handle the same amount of gas. It requires more wells to get the same amount of gas.

Therefore, there is a decided increase in the cost per M. c. f., due to the fact that there are more extensive operations and more equipment required, and that is what this

has in mind here, when I say that the gathering of gas will be substantially higher than those heretofore existing.

[fol. 4187] RUFUS M. SMITH a witness, having been previously duly sworn, resumed the stand and testified further as follows:

Cross Examination (Continued).

By Mr. Littman:

Q. Mr. Smith, at the close of yesterday's session, we were discussing your rock pressure maps for the years 1938, 1939, 1940 and 1941, Exhibits 24, 25, 26 and 27 for Identification.

[fol. 4188] I believe you testified that these maps were not suitable for the purpose of estimating the reserves of the Texas Panhandle Field by the rock pressure decline method, is that correct?

A. That is true.

Q. However, I believe you stated that you did make an estimate of the reserves in the Texas Panhandle Field by that method?

Mr. Culton: He did not make such a statement.

The Witness: I said I attempted to make that.

By Mr. Littman:

Q. Well, what do you mean by "attempted"?

There seems to be some difficulty here in the definition of terms.

A. In order to make a reserve study of a field by the production per pound of drop method, it is necessary to have an equilibrium pressure at the time the study is made, to compare with the initial pressure.

In my opinion, it is impossible and impractical from a practical standpoint, to obtain an equilibrium pressure of the Panhandle Field.

The figures that I used are those obtained from Railroad Commission reports, which are inaccurate by reason of the method that they used in obtaining them.

Q. Can you give us the reference to the data of the [fol. 4189] Texas Railroad Commission which you used that you just referred to as being inaccurate?

A. It is found in the annual report on the Panhandle oil and gas field of July, 1940, issued by the Railroad Commission of Texas.

Q. Now, will you state what you consider inaccurate about the method used by that commission, and stated in that report with respect to ascertaining the present—you used the term—

A. (Interposing) Equilibrium.

Q. (Continuing)—equilibrium rock pressure. Is that another term for weighted rock pressure?

A. That is true, in a way. By that I mean, they attempt to arrive at approximately the equilibrium pressure by calculating a weighted average rock pressure.

Q. I see.

Now, will you tell us what you deem to be inaccurate about the method used?

A. The method used—I do not believe it so states in here—

Q. (Interposing) "In here,"—by "in here", you are referring to the annual report?

A. In this 1940 Railroad Commission report on the Panhandle oil and gas field; but by investigation I have found that their average weighted rock pressures are obtained by referring to the various pressure bands on their annual rock pressure map, multiplying the area of each of the bands times the average pressure existing within those bands, and dividing by the total area of the several areas used.

Q. Now, what do you consider inaccurate about that, Mr. Smith?

A. It is a rough method. It is very crude, I might say.

Q. What is crude about it, and what is rough about it?

A. Well, the pressures of the wells existing in those bands vary from one side of the band to the other within a range of 50 pounds, so, obviously, if you select an average pressure it will be half-way between the two, and that is assuming a great deal.

Q. Well, the 50 pound isobaric intervals to which you have just referred is the same interval that you used in

your rock pressure maps, Exhibits 24, 25, 26 and 27, is it not? A. That is true.

Q. And, in your judgment as a geologist, that kind of an interval cannot be relied upon for purposes of making an accurate determination of the weighted average rock pressure in a field?

A. Yes, that is true.

Q. What would you say about the use of a 10-pound isobaric interval?

A. That would come closer to solving it, but still would [fol. 4191] not solve the problem.

Q. Would it come very close to solving the problem?

A. No, I do not think it would be sufficiently close to get a reasonable figure.

Q. Well, what would, in your judgment, come close to getting a reasonable figure?

A. I do not believe that any of the methods that have been used are very accurate, including my own.

Q. Well, you are stating, I take it, that the science of geology is not an exact science?

A. I believe we made that statement yesterday, Mr. Littman.

Q. Off the record, however.

Have you ever heard of isobaric intervals being used that were less than 10 pounds?

A. I do not believe so.

Q. In other words, 10 pounds is just about as close an interval as is ever used by geologists, generally?

A. Unless you would use a very large-scale map, it would be impractical to use a smaller than a 10-pound interval.

Q. Then, I gather from your testimony, Mr. Smith, that, in your opinion, no reasonable estimate can be made under existing methods of the weighted average rock pressures in the Panhandle Field of Texas?

A. I would like to answer that question this way:

[fol. 4192] That, in my opinion, the only way to find the correct equilibrium pressure would be an impractical project, that of shutting in the entire field, all the wells of the field, for a great length of time, until all wells had approximately the same well head pressure; then, you would have the equilibrium pressure of the field.

Q. How long a period would all these wells have to be shut in, in order to get such a reading?

A. I say it is impractical. It might take five or ten years to stabilize throughout the entire field.

Q. Well, the effect of doing what you suggest as impractical and theoretical, to-wit, shutting in the wells for a number of years, would all have the effect of giving a higher over-all rock pressure reading, would it not, than readings that would be secured by, let us say, a three-day shut in?

A. I do not know whether it would be higher than the weighted pressure or lower than the weighted pressure. It would be different from the calculated weighted pressure.

Q. Well, how long are wells ordinarily shut in before rock pressure readings are taken, generally?

A. Seventy-two hours.

Q. And when a reading is taken, at the end of 24 hours, let us say, it is less than it is at 72, is that right?

A. That is true.

Q. And a reading taken at 48 hours is higher than the [fol. 4193] one taken at 24, but less than the one at 72, is that right?

A. That is true.

Q. So in all probability, if you had the well shut in longer than 72 hours, you would still have a higher rock pressure reading, wouldn't you?

A. Except for one thing. On one side of the field, the pressure is very low. On the other side of the field, it is much higher. If those

Q. (Interposing) What field?

A. On the west sweet field, or rather the west field; so consequently, if it be stabilized, the one would raise and the other would lower, in order too reach a common pressure throughout the field, and the equilibrium pressure would be some place between the maximum and the minimum.

Q. Well, your maps which show the rock pressures for the years 1938, 1939, 1940 and 1941, namely, Exhibits 24, 25, 26 and 27, respectively, are maps which you do not consider accurate for the purposes of determining any weighted average rock pressure?

A. They are merely the best information available, but not sufficiently accurate to determine an average weighted rock pressure.

Q. Well, you then did not use the rock pressure decline methods? A. No, sir.

[fol. 4194] Q. But you did speak yesterday about having tried it and having secured what you called a "not reasonable figure."

What figure did you secure that you considered to be unreasonable?

A. I do not remember just offhand exactly what the figure was.

Q. Was it an estimate of the original gas content per acre?

A. I have attempted to use that method several times but, from the annual Texas Railroad Commission reports on the Panhandle Field, I find that one year there is one production per pound drop in rock pressure, the next year an entirely different production per pound drop in rock pressure.

There is no consistency in the production per pound drop as stated in their reports.

Q. And that result was predicated upon a 50-pound isobaric interval?

A. That is true.

Q. And, in your opinion, it cannot be used for purposes of determining gas reserves?

A. Accurately.

Q. Accurately.

Now, to what do you attribute this so-called incongruous result of having a decelerating rate of production per pound of rock pressure decline, Mr. Smith, to the inaccuracy [fol. 4195] cies that result from the use and application of the Texas Railroad Commission's data, or what?

A. That, together with some other factors.

Q. Will you name the other factors, please?

A. Some of the other factors are variations in the character of the reservoir, the fact that the gas is being withdrawn from Dolomitic beds, from pure Limestone

beds, from Granite Wash formations, as well as from crevices in Granite Wash, as shown on the cross-section; the fact there is oil production there; the fact that water is encroaching in some portions of the field; the fact that the field is not being withdrawn equally by all producers.

There are a number of other factors. I do not recall any more, right now.

Well, did you use the so-called porosity method of estimating the reserves in the Panhandle Field?

A. Yes, sir.

Q. That method also has some other names, doesn't it, such as volumetric method?

A. Volumetric.

Q. Let us have all the of the synonyms, so we will understand each other in this cross-examination.

A. Porosity, thickness of pay method, sand thickness porosity method, I believe it is also called.

Q. Well, without going into the details of that method [fol. 4196] at this time, you must, in order to make a determination of the reserves in a gas field by the porosity method, also have the weighted average pressure in the field, don't you?

Mr. Culton: You say, the weighted average pressure of the field?

Mr. Littman: Of the gas field, yes, sir.

The Witness: No, only the weighted average pressure of the area to be considered.

By Mr. Littman:

Q. What is the difference? Suppose I wanted to ascertain the reserves in a whole gas field. Wouldn't I have to have the weighted average pressure of the entire field under your method?

A. That is true.

Q. And I would have to have the same weighted average pressure under the rock pressure decline method, would I not? A. Yes.

Q. Inasmuch as you say that these pressures cannot accurately be determined in any event—

A. (Interposing) I beg your pardon. You do not have to have the present weighted average pressure under the method I used.

Q. What do you have to have?

A. You have to have the initial pressure only.

Q. You can determine it also by having the present [fol. 4197] weighted pressure, can't you?

A. That is not the method I used, however.

Q. You used the initial pressure?

A. I used the initial pressure only.

Q. Weighted initial pressure?

A. No.

Q. In order to make it accurate, you should have a weighted initial pressure, should you not?

A. Not necessarily the weighted average. The initial pressure should be constant throughout the field without any variations whatsoever.

Q. It should be, but it isn't?

A. That is true, it was not.

Q. No field ever was, was it?

A. None that I have had any contact with.

Q. Then, you do have to have a pressure, either initial or present, in order to compute by any method, isn't that true?

A. That is true, but it is much easier to obtain the initial pressure, whether you call it weighted average or merely initial pressure, than it is to obtain the present weighted average.

Q. I believe you stated yesterday that you had a list of wells from which you made a determination of the original pressures in the field, did you not?

[fol. 4198] A. Yes.

Q. And you said there was considerable variation, did you not?

A. I said there was a variation of possibly five to ten pounds, either way; from the 430 pounds. However, in the present pressure, there is much greater variance than five or ten pounds.

As a matter of fact, there is probably 250 pounds variations between the present pressures.

Q. Are you now speaking of the west Texas Field, or the entire field?

Mr. Culton: You mean West Panhandle Field.

By Mr. Littman:

Q. West Panhandle Field.

A. West Panhandle Field.

Q. Well, you did not, in any event, make a weighted average initial rock pressure determination, did you?

A. You might call it that, even though it might have been done mentally, it was an average.

Q. Well, you are talking about getting accurate. What would you do if you wanted to get an accurate original weighted average rock pressure? How would you go about it?

A. Since I was not there at the time, and was unable to take any of the initial pressures or see them taken with dead weight gauges or spring gauges, I would attempt to [fol. 4199] get articles that had been written on it by men who were there at the time.

I would value their judgment. I would get whatever other statistics were available, including logs of wells which were drilled at that time which contained the initial rock pressure, and from those data, to the best of my ability, determine the initial rock pressure of that field.

Q. You skipped pretty fast over the last part of that. You said from those data you would get it. What would you do with those data?

A. I would take the rock pressure reports for those data, add them up, divide by the number of tests and determine the initial average rock pressure.

Q. Wouldn't you weight those pressures as against the territory or acres?

A. It would not be necessary, if there had been no gas withdrawn.

Q. Even though there was a variation in initial rock pressures?

A. Absolutely. Those variations would probably be due principally to the inaccuracy of the apparatus used in getting the test.

[fol. 4200] Q. These readings that established the initial rock pressure of the field were taken over a period of years, weren't they?

A. A short period of years.

Q. How many years?

A. Possibly three or four.

Q. And gas had been withdrawn from time to time?

A. In very small quantities up to that time.

Q. So that the rock pressure reading, obviously, on each new well that was drilled did not reflect the virgin pressure of the entire field, did it, other than perhaps the first one, or is that not correct?

A. I do not think the amount of gas that had been withdrawn from the field in those first three or four years, considering the fact that this is such a large reservoir, would make even one pound difference in the rock pressure.

Q. We will come back to your method a little later. I had not intended to discuss it at this point, but the fact is that you did have to use an initial rock pressure?

A. That is right.

Q. As one of the elements in calculating the reserves in the Panhandle Field?

A. That is true.

Q. Now, do you have Exhibit No. 27 before you, which is the rock pressure map for 1941?

[fol. 4201] A. I believe the exhibits are on the floor there that I used yesterday, Mr. Littman.

(The document was handed the witness.)

Mr. Culton: Which exhibit was that you mentioned?

Mr. Littman: Exhibit 27.

By Mr. Littman:

Q. Now, you show certain rock pressures in the Panhandle Field, do you not, on that map?

A. Yes, sir.

Q. Do you show the pressures for the entire portion of the Panhandle Field, including the portions in which Panhandle Eastern's acreage is located?

A. This 1941 map is incomplete, as far as the whole Panhandle Field is concerned. At the time it was made, we had only tests on the wells connected to Panhandle Eastern Pipe Line Company.

Consequently, we put as much information on here as was available at the time.

Q. In other words, the map is incomplete in that it fails to show the rock pressures on a substantial part of Panhandle Eastern's acreage, is that correct?

A. Yes, that is correct.

Q. What is the porosity of the pay sand under the acreage controlled by Panhandle Eastern?

A. There is a great variation in those pay sands you [fol. 4202] have under Panhandle Eastern's acreage, as well as under the entire field.

Q. What is the average pay thickness under Panhandle Eastern's acreage?

A. The average pay thickness is between 70 and 80 feet.

Q. And what is the average over the field, over the entire West Panhandle Field? A. Seventy feet.

Q. In other words, Panhandle Eastern's acreage, in your opinion, has a thicker pay sand, does it not?

A. Slightly, on the average.

Q. Now, that is the over-all average, that you have given for the Panhandle Eastern acreage, is it not?

A. I gave two figures, Mr. Littman, one of 70 feet and one slightly over 70 feet, which I indicated was my estimate of the thickness of pay sand in the Panhandle Eastern acreage.

Q. I believe you said from 70 to 80, is that right?

A. Yes, I did.

Q. You have, in your Exhibit 30, divided Panhandle Eastern's acreage into Class 1 and Class 2, have you not?

A. Yes, sir.

Q. By the way, when I speak of Panhandle Eastern's acreage, I am going to, at all times, refer to the acreage which Panhandle Eastern has under lease, as well as that which it controls by gas purchase contracts.

[fol. 4203] A. I assumed that.

Q. That is, unless otherwise stated.

Now, what is the average pay thickness under the Class 1 acreage owned and controlled by Panhandle Eastern?

A. I would say between 70 and 80 feet.

Q. And what is the average of the Class 2?

W. I do not know exactly. It would be something somewhat less than 70 feet.

Q. Can you tell us, approximately, how much less?

A. I can guess at it.

Q. I want your best judgment, however. If it is just merely a guess, I do not think it would help the record any.

A. I would say, approximately 45 feet, in my opinion.

Q. Now, how did you arrive at this 70 foot figure and this 45 foot figure?

A. I arrived at the 70, slightly in excess of this 70 foot figure, by using all the logs of the wells of Panhandle Eastern Pipe Line Company which contained sufficient data to determine the pay thickness, added those thicknesses and divided by the number of wells, the answer being over 70 feet.

Q. How many wells did you use in making this calculation, and state whether or not a list of these wells is shown in your Exhibit 30?

A. No, a list is not shown in Exhibit 30.

Q. Can you state how many wells you used?

[fol. 4204] A. I believe there was right about 40 wells that we used, that had sufficient data to accurately determine the pay thickness.

Q. I believe you stated that you used 40 wells for the purpose of determining the average pay thickness in the Panhandle Eastern acreage in the Panhandle Field?

A. Approximately. There may have been more than that, but I believe it was about 40.

Q. And you are going to furnish us with the list?

A. Yes, sir.

Q. You will give us the farm and well number, the county, location and the pay thickness and also any other identifying features that you can supply, will you not?

A. Yes, sir.

Q. Now, were those all Panhandle Eastern's own wells [fol. 4205] or were those 40-odd wells the wells of others?

A. Some of them were gas purchase wells.

Q. But all of them are—

A. (Interposing) Connected to Panhandle Eastern Pipe Line.

Q. Very well. Now, you have a list of wells shown in Schedule 1 of Exhibit 30, have you not? A. Yes, sir.

Q. I see 34 wells. Did you use these wells for the purpose of determining the average pay thickness?

A. Some of these wells.

Q. Can you designate in the record, by line number, the wells of Schedule 1 that you used in your determination, that is, which of these wells are included in the list of 40?

A. One, 2 and 3; Lines 14, 15; Lines 26, 28.

Q. Does that complete it?

A. Yes, that is all.

Q. In other words, you have pointed to all of the wells shown in Schedule 1 which are connected to Panhandle Eastern's lines, have you not? A. Yes, sir.

Q. Now, how many acres of leases are owned and controlled by Panhandle Eastern Pipe Line Company?

Mr. Culton: You mean, in the Panhandle Field?

[fol. 4206] By Mr. Littman:

Q. In the Panhandle Field, yes.

A. 65,429, as shown on Schedule 2 of Exhibit 30.

Q. The approximately 40 wells that you had would average about one well for every 1,600 acres, would it not, approximately?

A. That is hardly the way to arrive at a figure of that kind, since some of the wells used, or rather, some of this acreage, would not be applicable to those 40 wells.

Q. How much of the acreage of this 65,000 acres would not be applicable to these 40 wells?

A. Approximately 40,000.

Q. 40,000 is applicable? A. Is not applicable.

Q. In other words, do I understand that 40 wells that you used were used by you to determine the average pay thickness for approximately 15,000 acres?

A. The difference between 65,000 and 40,000 is 25,000.

Q. I am sorry, it is 25,000. Is my understanding correct, using 25,000?

A. I do not know just exactly what you are leading up to, but the reason I only used 40 wells instead of all of the wells connected to the pipe line was due to the fact that information was not available to accurately determine the pay thickness of the remainder of the wells.

[fol. 4207] Q. Well, I am simply trying to understand what you did, Mr. Smith. You straighten me out if I am wrong.

My understanding of your testimony is that the 40 wells that you did utilize for purposes of determining average pay thickness were applicable to approximately 25,000 acres in the Panhandle Field. Is that correct?

A. Directly, but were used as determining the average pay thickness under the entire 65,429 acres.

Q. Then, doesn't it follow, that, on the average, you have one well determining the situation for approximately 1,600 acres on the average?

A. If you divide 40 into 65,429, I think you would get approximately that figure.

Q. Well, you do not think it is proper to draw that kind of conclusion? A. No, I do not.

Q. Well, let's look at it another way. You say that the 40 wells are applicable to approximately 25,000 acres.

A. That is true.

Q. How did you determine the average pay thickness on the remaining 40,000 acres of Panhandle Eastern's reserves?

A. I used that figure to apply to all 65,429 acres because that was the best information that I could obtain from the well logs that I had.

Q. Well, how many wells does Panhandle Eastern and [fol. 4208] its gas vendors have in the Panhandle Field?

A. 110.

Q. Now, you had approximately 70 more wells from which to secure data, did you not? A. Yes, sir.

Q. And why didn't you secure data with respect to pay thickness from those wells?

A. Because they were drilled early in the history of the field and accurate data was not kept on a great many of them. In addition to that, very often when a large amount of gas is encountered, it is almost impossible to determine the thickness of pay from which that great volume is coming.

Q. Will you explain why that is true?

A. The reason being that the samples from those formations are blown out of the hole and cannot be caught and examined, whereas, when a small amount of gas is blowing

from a hole, usually the samples will accumulate in the bottom of the hole and can be brought to the surface by running the bailer down the hole, collected and examined.

Q. Will you tell us what a bailer is?

A. A bailer is a long tube made of pipe with a valve in the bottom.

Q. Now, where do you go to get the data as to pay thickness, from the well log?

A. From the samples, together with the driller's log. [fol. 4209] Q. Well, now, the driller keeps a log as he drills, does he not? A. That is true.

Q. And he makes a record of each strata and the thickness of each?

A. As near as he can determine it.

Q. And it is quite difficult, is it not, to make an accurate determination? A. That is true.

Q. What difficulties or troubles does a driller encounter with respect to determining the thickness of these strata encountered? How does he know when he hits one or the other?

A. He determines the increase in open flow by use of a pitot tube. This pitot tube is made of a piece of pipe, one end of which is bent in a semicircle. It is so constructed that the outer end of the semicircle falls at about the center of the casing from which the gas is flowing. The other end of this piece of pipe is attached to a piece of rubber tubing.

The other end of the piece of rubber tubing is attached to a manometer. This manometer is a "U"-tube containing mercury. The force of the gas on the small section of bent end of the pitot tube changes the level of the column of mercury in the manometer.

[fol. 4210] Behind this "U"-tube are two scales, one on each arm of the "U"-tube. There can be determined the amount of rise in one column of the mercury and the amount of fall in the other. The sum of the two is the difference between the levels of the mercury which is usually expressed in inches.

A table is referred to then to determine a multiplier. This multiplier is used to multiply times the square of the diameter of the casing from which the gas is coming.

After the multiplier and the square of the diameter are multiplied together, the open flow is determined.

Q. Well, that gives you the open flow. How do you relate that to the pay thickness? Proceed.

A. That is done from time to time, and increases in the volume of gas coming from the casing are noted by the driller on the log.

Naturally, if there is an increase of gas coming from the casing, more gas has been encountered in the bottom of the hole. At the same time, the driller notes the various formations which he is drilling in, whether it be limestone, Shale, Dolomite, Granite Wash or what not.

Q. How does he obtain that?

A. By obtaining samples. Lowering the bailer in the hole, taking the bailer out and taking the samples out of the bailer and examining the samples and then later, they are filed in the office.

[fol. 421] Q. And as you have indicated, he cannot do that when the well is large?

A. When the volume of gas is large, the cuttings are blown from the hole and cannot be caught in the bailer and brought to the surface.

Q. Isn't that situation which you have just described the normal situation in the Panhandle field?

A. Sometimes it is, sometimes it is not.

Q. Most of the time it is, isn't it?

A. I would say about half the time it is and half the time it is not, because there are large wells and small wells in the Panhandle.

Very often you can catch samples from the large wells before the great volume of gas has been reached. Very often you can catch samples below the point at which the great volume of gas is reached.

Q. Well, if you had 10 different drillers drilling this well, you would probably get 10 different answers on the pay thickness, wouldn't you?

A. That is true. For that reason, the best way to determine the thickness of pay is by using the driller's log in combination with a study of the samples under the microscope.

Q. That is, if you have any samples?

A. Yes, sir.

[fol. 4212] Q. When you get the sample, it is usually a powdery substance, is it not?

A. It is very fine.

Q. What do you do with it then?

A. Examine it under the microscope.

Q. And what can you see under the microscope? What can you determine by looking at it?

A. You can determine whether or not there was any porosity. There must be porosity or there will be no gas.

Q. Of course, you know that before you look at it under the microscope, do you not?

A. That is true.

Q. What is the advantage of looking at it under the microscope?

A. If you find that the driller has logged an increase in gas and the samples reveal that there is porosity in the samples, I believe it is safe to assume that there has been a gas pay at that depth.

Q. What can you observe by microscope of one of these powdery samples that would reveal the identity of the strata?

A. My college training enables me to be able to determine whether or not the substance in the sample was shale, lime, dolomite, granite wash and such.

Q. Well, what could you see that would identify the sand with respect to whether or not it was a producing sand?

[fol. 4213] A. If there is the presence of porosity.

Q. The sand is all ground up and pulverized when you look at it, isn't it?

A. It is in rather small particles. That is the reason we use a microscope, in order to be able to see them better.

Q. Can you tell anything about porosity looking at these fine granules? A. I think I can.

Q. Can you tell the percentage of porosity by any such method as that?

A. Not definitely. I can only estimate.

Q. You would not come very close either, would you, by that method?

A. That is a matter of opinion.

Q. We will come to the porosity question a little later. I meant to stick close to the pay thickness for the time being.

Now, you testified that a number of different drillers would probably secure different results in their logs. Isn't it also a fact that different geologists would also secure different results when they examine the same log and the same samples from the same well?

A. Yes, the human element will enter into it.

Q. And there would be some very wide variations and [fol. 4214] differences, would there not?

A. Not necessarily. That is the reason that we use the driller's log and the samples in conjunction, so as to be able to determine, as nearly as possible, the actual circumstances with all data that we have.

That is practically all of the data that is available from drilling the well, the driller's log and the samples.

Q. You use it because you do not have anything better to use?

A. That is true. You cannot see down in the hole.

Q. Mr. Culton: You said; "is compensated." I won- [fol. 4215] dered if you meant "is not compensated."

Mr. Littman: Whether or not that flow of gas is or is not compensated, yes.

The Witness: I do not know what you mean by the "decline of gas."

By Mr. Littman:

Q. I mean the decline in gas from that which is originally secured when the pay sand is first struck.

A. Do you mean that you get a certain open flow and then later you have a less open flow than you did have formerly?

Q. That is right, and then you come into some more production as you drill deeper, that is the situation.

A. That is possible.

Q. It occurs quite frequently, does it not?

A. I would not say so, no.

Q. Well, when it does occur, how can you, as a well driller, accurately determine the thickness of the various pay strata in those circumstances?

A. By the same method. I would use a driller's log wherein he records the various open flows as the drilling of the well progresses, and by examination of the samples, determine whether or not porosity existed at the point where he recorded an increase.

Q. The only other interpretation to your question that I can [fol. 4216] see is that sometimes, after the pay streak is reached and an open flow test is taken, later it may blow down slightly to a slightly lesser volume, but—

Q. (Interposing) That is the situation—

A. (Continuing)—but that decline is not usually great. The blow-down, so-called, is not usually great.

Q. Well, when it blows down like that, what do you attribute it to?

A. The fact that the head has been blown off the gas in the formation in which it was originally contained.

Q. Do you, or do you not, count that in the depth of the sand?

A. It is considered, yes.

Q. In various ways by various drillers?

A. Well, the drillers do not determine the thickness of pay.

Q. Doesn't the driller make some record on his well log concerning the thickness of the strata encountered?

A. Yes. However, he does not determine for me what I think the thickness of pay is. I use his log in conjunction with the samples to determine what I think the thickness of pay is.

Q. You do not know what he would interpret the situation to be?

A. Yes, I have his idea on the log.

[fol. 4217] His idea would be different from someone else's idea?

A. His idea would influence my opinion to a certain extent.

Q. And various drillers might interpret, and probably would interpret, that situation differently?

A. That is natural.

Q. Well, at any rate, in order to get an exact determination of reserves by the porosity method, you have to know the exact weighted average pay thickness throughout the area for which you are making the determination, do you not?

A. That would be the best thing to have, yes. When you do not have it exact, then you must use the best thing you have.

Q. No matter how inexact it is?

A. No matter how inexact it might be.

Q. Now Mr. Smith, another element that is required in determining reserves by the so-called porosity method is to determine the porosity, is it not?

A. Yes, sir.

Q. Just a moment, before I go to porosity, can you state how many of the 40 wells that you used for the purpose of determining its average pay thickness is lodged in the Class 1 and Class 2 acreage?

A. No, I cannot, not at this time. I could designate [fol. 4218] that on the list which I will supply you.

Q. I wish you would add that bit of information to the schedule which you will supply.

A. Yes, sir.

Q. You do not have any recollection at all as to how many, approximately?

A. I would rather not say at this time.

Q. Now, what porosity of pay sand under the acreage controlled by Panhandle Eastern did you use?

A. Twenty percent.

Q. Is that a straight, flat 20 percent for the entire Panhandle Eastern acreage? A. The Class 1 acreage.

Q. That is for the Class 1. How about the Class 2 acreage?

A. I did not estimate the porosity of the Class 2 acreage.

Q. Can you give us any ideas that you may have on the subject as to the porosity of the Class 2 acreage?

A. It would probably be less, possibly in the neighborhood of 15 percent.

Q. Now, how did you arrive at the porosity of the acreage in the Panhandle Field?

A. I have taken what is generally accepted by other geologists who have worked on this same problem.

[fol. 4219] Q. I take it by that answer that you did not undertake an independent investigation of your own?

A. That is true.

Q. Have you ever seen any cores taken from acreage controlled by Panhandle Eastern?

A. Not in the Panhandle of Texas.

Q. Now, perhaps for the purpose of the record, we had better explain what a core is. Of course, it is a core of the producing sand that I am referring to.

A. A core of the producing sand is a cylindrical column obtained by using a rotary drill with a coring bit containing a core barrel and represents the strata penetrated by the drill from the surface to the bottom if the core bit is used during the drilling of the entire well.

Q. How large is a core?

A. It might be various diameters. It might be two inches in diameter or it might be three inches in diameter, or it might be 2-1/2 inches in diameter.

Q. And how long?

A. As long as the core bit and core barrel is used on the rotary tools.

Q. Approximately?

A. Some of them go from the surface to the bottom. Others go from the top of the producing formation to the bottom of the well. Sometimes a section merely ten or [fol. 4220] twelve feet is taken. It varies.

Q. Have you ever seen any cores taken from the pay sand of acres controlled by Panhandle Eastern?

A. Not in Texas Panhandle.

Q. Neither has anyone else?

A. Not as far as I know.

Q. And why is that true? Isn't it a fact that you cannot get any?

A. It would be difficult to obtain a good core of a producing formation in the Texas Panhandle.

However, some cores have been taken by other companies.

Q. In the West Panhandle Field? A. Yes, sir.

Q. Will you please give me the name of the company that has taken a core, and the well from which it was taken?

A. In the article referred to yesterday—strike what I started out with, because I do not find what I expected.

there—I have seen some cores that were said to have been taken from the wells in Texas Panhandle.

I do not know what wells they were taken from. I have also read that cores have been made from wells in the Texas Panhandle and porosity determinations have been made from these cores.

I cannot cite any specific examples right now.

Q. Are you now referring to cores that were taken from [fol. 4221] the producing horizons?

A. Yes.

Q. You understand, do you not, that if the cores were taken from the producing horizons, they would be taken from the least porous portions, would they not?

A. Probably.

Q. That is to say, you would get the harder part of the producing sand which, in all probability, does not produce much gas?

A. That would be the most likely thing to get.

Q. In other words, is my understanding correct, Mr. Smith, that the good producing portions of the producing sand in the Texas Panhandle Field is rather a soft substance that is more or less chalk-like in nature?

A. I would not say it was chalk-like.

Q. Suppose you describe it.

A. The producing formations that I have examined, the Dolomite is rather a hard, crystalline substance with a great many pores apparently existing.

The Lime was not chalk-like but more inclined to be brittle. The Granite Wash, of course, is an unconsolidated substance which would disintegrate very easily.

Also, it is my belief that porosity varies in the Texas Panhandle Field from zero to 100 percent, the 100 percent probably occurring most frequently in Limestone subterranean caverns, Granite fissures or crevices.

Q. And the zero would occur in what kind of strata?

A. The zero would occur in solid granite, Limestone without porosity, Dolomite without porosity.

Q. Now, I believe you stated that cores are taken by the rotary drill? A. Yes, sir.

Q. What kind of drills are used in the Texas Panhandle Field?

A. Our drilling practice is to drill to the top of the producing formations with a rotary rig, and complete the well with a cable tool rig.

Q. Now, will you briefly describe this cable tool rig?

A. The cable tool rig is chiefly a steel cable with a string of tools on the bottom, consisting of a rope socket, a set of jars, a stem and cable tool bit.

This bit operates very much like a churn drill, being raised and lowered and the cutting accomplished by the fall of the bit on the various formations.

Q. In other words, the drilling is accomplished by the percussion method? A. Substantially.

Q. And that percussion has the effect of pulverizing the pay strata, does it not?

A. I do not consider it pulverizing, Mr. Littman.
[fol. 4223] Q. You correct me—

A. (Interposing) Something pulverized, I would say, would be like a powder that a pharmacist might make, using a mortar and pestle to pulverize the substance.

The samples I have examined are more like sand, or very fine gravel than a powder.

Q. Very fine is what you used, and I used the term "pulverized". It is satisfactory to use, "very fine"?

A. Yes.

Q. In order to determine accurately the reserves under acreage, you have got to know the exact porosity of the pay thickness, the pay sand, do you not?

A. As near as can be determined.

Q. Now, how do you go about determining the porosity after you have the sand? What do you do with it to determine the porosity of it?

A. The best method of determining the porosity would be from cores, running porosity tests on the cores obtained from the various producing formations.

Q. In other words, the accepted method and the best method, is to take the core? A. That is true.

Q. And take it to the laboratory? A. Yes, sir.

Q. And then what do they do with it in the laboratory?
[fol. 4224] A. I cannot define exactly the steps, the mechanics of making a porosity test. There are several methods, however.

Q. Well, Mr. Smith, it is rather intricate, is it not, the method that they use?

A. I believe the general idea is displacing the pores within the core by a liquid and determining the amount of liquid which entered the pores in comparison to the total volume of the core being tested. That is one method, at least.

Q. Now, on these 40 wells that you used for purposes of determining the pay thickness in the acreage of Panhandle Eastern, did you have any porosity tests made?

A. No, sir.

Q. Any cores for those wells? A. No, sir.

Q. Or have any samples for those wells?

A. Yes, sir.

Q. Why didn't you?

A. I did not have any cores to be tested.

Q. That is one of the difficulties in the Panhandle Field, is it not?

A. That is true. There are many.

Q. And that is one of them, but if you wanted to be exact about it, that is what you would have to do, namely, take a core out and send it to the laboratory and have tests made?

[fol. 4225] A. That would be the most accurate way of determining the porosity, but you could not determine the porosity by examining any one core. You would have to test many, many cores to determine the average porosity.

Q. That is precisely what I was coming to next.

As I understand it, Mr. Smith, when you got through sending this one core to the laboratory and having it tested for porosity, you would know what the porosity is for that one piece, and that is all, isn't that right?

A. That is true.

Q. You could not, by that method or manner, determine what the porosity was for an entire acre, for instance, without sending the entire acre up to the laboratory, could you? A. That is true.

Q. Nobody ever did anything like that, did they?

A. Not to my knowledge.

Q. Do you know of any tests that have been made of the producing sands in the Panhandle Field for porosity?

A. For porosity tests?

Q. Yes.

A. I have heard that some have been made and was led to believe that the cores that I saw belonging to other companies had been tested for porosity.

The porosity figure that I used, 20 percent, was used because it has been accepted for the last 15 years as being [fol. 4226] the—I would not say 15 years either—for the last 8 or 10 years, as being the porosity average of the Texas Panhandle Field.

Q. Have you ever heard of a geologist by the name of Ralph E. Davis? A. Yes, sir.

Q. Did you hear him testify in this proceeding?

A. No, sir.

Q. Do you consider Mr. Davis an authority on the subject of geology in the Panhandle Field?

A. He has made a great many studies of the Panhandle Field. I really do not know what it would be necessary to determine whether or not he is an authority.

Q. Well, considerable reliance has been placed upon Mr. Davis' judgment and estimates in this proceeding, and I take it you do not consider the reliance misplaced?

A. No.

Q. I am going to read you what Mr. Davis said at transcript Pages 1526 to 1527 and then ask you a question about it. This is Mr. Davis talking:

"Nobody has ever taken a core of even a single well, so far as I know, and had the porosity determined throughout the pay zone from top to bottom but even if he had done that and had it done for 25 wells, he still would have only 25 samples in a field 125 miles long so he would not have anything anyway."

[fol. 4227] So far, you and Mr. Davis are in substantial agreement, are you not?

A. That is true.

Q. I will read on:

"He would have another one of these little things, one-quarter inch long, to measure the Washington Monument with. We know pretty well how thick the producing zone is in the Amarillo Field from data from more than a thousand wells. I think the figure is 71½ feet average

thickness but nobody knows whether the porosity is 20, 30 or 35 percent. The boys who use 20 think 20 is a good figure to use. I think 30 would be a better figure myself. The reason I think 30 would be better is because it must be 30 if the answer we have by the other method is right."

Do you agree with Mr. Davis' conclusion that 30 percent is the proper porosity figure? A. I do not.

Q. You used 20? A. Yes, sir.

Q. And, of course, if you had used 30 in your calculation, you would have come out with a much higher estimate of reserves, is that correct?

A. That is true. I imagine it would have been approximately 50 percent higher.

Q. Approximately 50 percent higher, is that correct?

[fol. 4228] A. That is what I said.

Q. Well, there are differences of opinion as to porosity and as to other matters, I take it?

A. I can only say that that is most widely accepted, that the porosity of the Texas Panhandle Field is 20 percent.

Q. Now, will you tell us what you mean by, "most widely accepted"? Who are the men, generally, who accept it, and tell us how you arrived at that conclusion?

A. Mr. Cotner and Mr. Crum agreed that 20 percent was the average porosity in the Texas Panhandle Field. I have talked to numerous other men and read numerous other papers, where 20 percent was taken as the average porosity.

I believe the gentleman you mentioned yesterday, Mr. Peterson, of the Texoma Natural Gas Company, takes 20 percent as the average porosity.

Q. You spoke about these gentlemen agreeing on 20 percent. Do you mean by that to imply that they sat down and kind of reached an agreement not to disagree about this 20 percent?

A. I do not mean that at all. I think each man's work was independent of the others.

Q. But you are not at all certain about how each man arrived at the 20 percent?

A. No, I am not. I only know that they have used that.

Q. Yes, and you know that there are other geologists [fol. 4229] that do not use it?

A. Mr. Davis, for instance.

Q. Any others that you can mention or name that do not agree with the 20 percent figure?

A. I do not recall any others, right offhand.

Q. You do not doubt there are others that disagree?

A. I do not doubt it. It is entirely natural that individuals would differ in opinions.

Q. On such a highly controversial subject?

A. On porosity, as well as many other subjects.

Q. Well, have you ever made a study of the methods used by each one of these geologists that you have named who have arrived at a figure of 20 porosity?

A. I have read some of their studies, yes.

Q. But you did not participate in their methods?

A. No, sir, I did not.

Q. Are you certain that you know the precise and exact data used by them to arrive at this 20 percent figure?

A. No, I do not.

Q. In other words, you are relying upon the authority of the individual, rather than upon any particular individual method followed or used by the individual geologist, is that a correct statement?

A. I do not understand exactly what you mean by authority.

[fol. 4230] Q. I use it in this sense, Mr. Smith, that oftentimes we accept the statement of a gentleman distinguished in a given field simply because he made it and because we respect his ability and his background and his reputation, as contra-distinguished from those instances where we make our own independent investigation of what he did to arrive at his conclusion.

Do you see now what I am driving at?

A. Perhaps I had better answer the question this way, that the reason I accepted these gentlemen's opinion in the first place, it appeared reasonable to me. In the second place, all of the men who have used that figure of 20 percent have had a great deal of experience over a long period of time in the Texas Panhandle Field and, as you say, I valued their opinion, in view of their experience.

Q. Let's analyze what you have just said for a moment. You say that their conclusions sounded reasonable to you?

A. Yes, sir.

Q. Now, you made no independent check to ascertain whether or not their conclusions were or were not reasonable; did you?

A. No.

Q. By that statement, I take it you mean it just struck you as being about right, but you did not have any particular data to tie it to?

[fol. 4231] A. That is true. I think we all accept other people's opinions if we consider them capable of making logical decisions and of good reasoning power.

Q. Do you know whether or not any of these gentlemen upon whom you so heavily relied for the basis of this 20 percent porosity had ever made any actual porosity tests of the producing sand in the Panhandle Field?

A. No, I do not know whether they have, or whether they have not.

Q. Can you state for us, Mr. Smith, what the average rock pressure of the acreage controlled by Panhandle Eastern was as of June 30, 1941, or have you already stated that you could not make such a determination?

A. I do not believe I have stated it previously, but I do not know.

Q. Have you ever undertaken to make such a determination?

A. I do not believe I have.

Q. Have you ever undertaken to do so for any date of the year 1940?

A. Yes, and also the year 1941—you said the average rock pressure under wells on Panhandle Eastern acreage?

Q. The average rock pressure of the acreage controlled by Panhandle Eastern on or about June 30, 1941.

A. No, not that.

[fol. 4232] Q. Not that; and you did not do that for any of the years 1940, 1939, 1938 or 1937?

A. No, sir.

Q. Now, you have just indicated, Mr. Smith, that you did make some determination of average rock pressure. Now, will you state which one you made?

A. They were arithmetical averages of the wells now existing on Panhandle Eastern acreage.

Q. Is that contained in your Exhibit 30?

A. No, sir.

Q. I did not recall whether it was, but I wanted to make certain that my recollection was correct. Do you have such determination with you?

A. It does appear in my exhibit.

Q. What page?

A. Schedule 8, Page 4, Column D, Line 26.

Q. Now, these data are shown as of July, 1940?

A. Yes, sir.

Q. Do you have the same figure for 1941?

A. Yes, sir.

Q. And that is in column—

A. (Interposing) No, it does not appear on the exhibit.

Q. I looked at Column G, and I notice now that is total production. Where does your 1941 figure appear?

A. I have it here. It was not available at the time the [fol. 4233] exhibits were made.

Q. Perhaps it would be well to read it into the record at this point.

A. The arithmetical average rock pressure of wells connected to Panhandle Eastern Pipe Line Company in the Texas Panhandle Field as of the summer of 1941, is 324.43 pounds.

Q. Is the figure that you have given me the total figure for both company-owned wells and the wells owned by gas vendors?

A. All those connected to Panhandle Eastern Company's lines in the Texas Panhandle Field.

Q. You could not break that figure down in the same manner as you did for Schedule 8, I do not mean by individual wells, but I mean by classes of wells?

A. Yes, I can.

Q. I would appreciate it if you would do that, Mr. Smith.

[fol. 4237] RUFUS M. SMITH, resumed the stand, and testified further as follows:

Cross-Examination (Resumed)

By Mr. Littman:

Q. Mr. Smith, at the conclusion of the morning session you were about to read into the record the 1941 figures

with respect to rock pressures of the wells owned and controlled by Panhandle Eastern. Would you mind doing [fol. 4238], so now?

A. I refer to Exhibit 30, Schedule 8, page 4, column D.

The arithmetical average of the 53 wells mentioned in Line 24 for 1941 is 298.02 pounds. The arithmetical average for the 57 wells mentioned in Line 25—in both instances this is Column D—for 1941 is 348.54 pounds.

I believe that makes all three figures which we were going to bring up to date.

Q. I presume the figure for Line 23, Column D, is already included in one of the tables that you have named, is it?

A. I have a new figure that could be inserted there for 1941, Line 23.

Q. Would you mind giving us that figure, please?

A. That figure of Schedule 8, page 4 of Exhibit 30, Column D, Line 23, for 1941 will be 341.28 pounds.

Q. And the figure for Line 26, Column D, for 1941 is the one which you read into the record just before the close of the morning session, to-wit, 324.43 pounds?

A. That is correct.

Q. Which represents the grand total for 110 wells in Texas?

A. That is correct.

Mr. Culton: While you are on that would you mind [fol. 4239] giving us the relative value of Line 4, for 1941, the 22 Huber wells?

The Witness: That figure is 242.41 pounds for 1941.

By Mr. Littman:

Q. Mr. Smith, do you know of any test having been made to determine porosity of the producing formation in any gas well in the Panhandle field?

A. It is my impression that I was shown a core of a gas well in the Panhandle field which had had porosity tests run on it. As I said this morning, I cannot say what well that was or where it was located, because I don't remember.

Q. Do you know the result of the test?

A. As I recall the porosity varied considerably in various tests that were run throughout the core.

Q. Can you give us the figures?

A. No, I cannot. However, I have reason to believe that the porosity throughout the field will vary from zero to 100 percent, as I stated this morning.

Q. Now, do you know who made the tests on that particular core?

A. No, sir.

Q. Do you know of any other tests that have been made?

A. No, sir.

[fol. 4240] Q. And, as I recall your testimony this morning you stated that the core which you saw was probably from a part of the producing sand which was not highly productive?

A. Probably so.

Q. And that was because of the fact that the more productive portion of the sand is of such character that it will not permit the taking of a core?

A. That is true.

Q. Do you know the name of the company from whose lease this particular core was taken?

A. No, I don't. As I remember—it has been several years ago—I believe the core was in the office of the Columbia Fuel Company of Amarillo, Texas. The geologist had it there.

If I remember correctly it was in that office, but I don't know what company drilled the well.

Q. Do you recall whether or not the core was in Mr. McNue's office in Amarillo?

A. No, it was in the same office, but in the office of Mr. Hemself. They are in the same office together in Amarillo, Columbia Fuel Company.

Q. In the same building?

A. In the same building.

Q. Going back for a moment to the approximately 40 wells from which you determined the average pay thickness of the producing horizon underlying the Panhandle Eastern acreage, do I understand that you merely totalled the thicknesses and then divided by the number of wells?

A. That is true. I obtained an arithmetical average.

Q. Isn't there another way of determining average pay thickness, namely, a method by which you weight the thickness as against the acreage?

A. There probably is. I don't believe it could be accurately done, however. There would be a great many exceptions made if a method of that kind were used.

Q. In other words, you would have to assume by the method that I have suggested, a certain area around a well having a given pay thickness?

A. That is true.

Q. Is that method very commonly used?

A. I don't know of any case where it has been used.

Q. Of course, when you merely take the total thicknesses of 40 wells, or some such number, and divide by the number of wells, you are making quite a few assumptions, too, by that method, are you not?

A. That is true. However, the figure that I obtained from that operation agrees very well with authorities' estimates of the average thickness of pay in the Panhandle gas field.

[fol. 4242] Q. Who are the authorities to which you are referring?

A. Well, these two gentlemen who wrote the paper referred to previously, Cotner and Crum, in which I believe they estimated the pay thickness to be 69½ feet. Some others of whom I read have estimated it to be 70 and 72 feet, all of which are very close together.

Q. Now, the estimates of these experts have reference to the entire Panhandle field, do they not?

A. Yes, sir.

Q. As distinguished from the Panhandle Eastern's acreage?

A. Yes, sir.

Q. Have these other experts ever made a determination for Panhandle Eastern's acreage?

A. No.

Q. That determination was made by you from the approximately 40 wells that you have told us about a few minutes ago?

A. Yes, sir.

Q. Now, you have made an estimate of the remaining gas content of Panhandle Eastern Pipe Line Company in

its acreage in the Texas Panhandle field, which is shown in Exhibit 30, have you not?

A. Yes, sir.

[fol. 4243] Q. I note that you use from time to time a description "Remaining Gas Content," in describing your estimate of reserves. What do you mean by "Remaining Gas Content"?

A. The gas remaining in the formations of the Panhandle gas field.

Q. As of July 1, 1941?

A. Yes, sir.

Q. Does it mean the reserves now under Panhandle Eastern's acreage which will be recovered by Panhandle Eastern?

A. Not necessarily.

Q. Well, will you explain what you mean by "Not necessarily"?

A. I mean that I don't know at what abandonment pressure the field will be abandoned.

Q. Suppose you turn to Schedule 3 and we will refer to specific figures. Now, the amounts that you show at the foot—

A. That is page 2?

Q. Schedule 3 of your Exhibit 30. Schedule 3, page 1, and page 2.

At the foot of the columns D, F, H, and J, of each of those pages, you have figures which purport to represent the number of m.c.f.'s, do they not?

[fol. 4244] A. Yes.

Q. Now, each one of those figures represent the recovery at the abandonment pressures shown at the top of the columns, do they not?

A. That is true?

Q. You have eight different figures, each one representing a different abandonment pressure.

A. That is right.

Q. Now, I am referring to those figures at the foot of each of those pages.

Do these figures represent the amount of gas as of July 1, 1941, which will be recovered by Panhandle Eastern Pipe Line Company at the assumed abandonment pressures shown at the top of each of those columns?

A. That is my estimate of what the figure would be at the various abandonment pressures.

Q. Now, you start out with an abandonment pressure of 150 pounds and then you go to 125, and then to 100, to 75, to 50, to 30, to 25, and to zero, do you not?

A. Yes, sir.

Q. And I take it from your answers previously made that you are not testifying with respect to which abandonment pressure will actually be the true abandonment pressure of the field?

A. That is absolutely true.

[fol. 4245] Q. In other words, you merely show the estimate upon the eight assumptions?

A. That is true.

Q. Now, do you mean that this gas is in place in the acreage at present?

A. That at least that amount is in the acreage at present if taken down to the various abandonment pressures.

Q. In other words, you are not including in this estimate any gas under somebody else's acreage?

A. No, sir.

Q. That may or may not be recovered through Panhandle Eastern's wells?

A. No, sir.

Mr. Culton: Nor are you taking into consideration any that might be drained from somebody else's leases.

The Witness: That is absolutely true.

By Mr. Littman:

Q. In other words, you are taking gas in place as you can best estimate it?

A. That is true.

Q. And, of course, this estimate shown on Schedule 3 includes the estimate of gas in the acreage subject to gas purchase contracts with Panhandle Eastern Pipe Line Company?

A. That is right.

[fol. 4246] Q. Now, are these reserves shown at the foot of these eight columns, what might be properly described as recoverable reserves?

A. It is sometimes referred to in that manner and you might say that that is true.

Q. That is, of course, based upon the assumed abandonment pressure? A. That is right.

Q. Now, I know that the abandonment pressures have quite a great effect upon the amount of gas that will be ultimately recovered, do they not?

A. Yes, sir.

Q. Would you mind reading into the record the eight figures for each of the abandonment pressures that you have used? A. That are found on Line 19?

Q. Yes.

Mr. Wheat: I think possibly that might be misunderstood, Mr. Littman: Do you mean the amounts for the eight abandonment pressures?

Mr. Littman: Yes.

Mr. Wheat: You couched your question a little the opposite of that, and I wondered if you mean it.

Mr. Littman: I am glad to have you correct me at any time I misspeak myself. That is why I thought it would be [fol. 4247.] well to read each figure into the record at each abandonment pressure.

The Witness: I estimated remaining gas content in the Texas Panhandle field under acreage constituting reserves of Panhandle Eastern Pipe Line Company as of July 1, 1941, at a pressure base of 16.4 pounds absolute as found in Exhibit 30, Schedule 3, page 1, line 19, in Column D, as 387,361,187 m. c. f. at 150 pound assumed abandonment pressure.

In Column F, 445,520,475 m. c. f. at an assumed abandonment pressure of 125 pounds.

In Column H, it is 503,679,762 m. c. f. at an assumed abandonment pressure of 100 pounds.

In Column J, it is 559,798,371 m. c. f., at an assumed abandonment pressure of 75 pounds.

On page 2 of the same exhibit, same schedule, Column D, Line 20, 618,977,998 m. c. f. at an assumed abandonment pressure of 50 pounds.

Column F, is 663,872,884 m. c. f. at an assumed abandonment pressure of 30 pounds.

Column H shows 675,096,607 m. c. f. at an assumed abandonment pressure of 25 pounds.

Column J shows 733,255,894 m. c. f. at an assumed abandonment pressure of zero pounds.

Q. The figures which you have just read represent the gas which you estimate will be recovered by Panhandle [fol. 4248] Eastern Pipe Line Company at each of the abandonment pressures that you have named?

A. At least that much.

Q. Will you please describe what you mean by "at least that much"?

A. This estimate was made, in my opinion, on a very conservative basis as stated in my written testimony. It was made on what I consider the basis of the average in the field.

I stated that it was conservative several times in the testimony, and I have an exhibit in here attempting to show why I made the statement that it was a conservative estimate.

Schedule 5 of Exhibit 30 is a comparison of open flow potentials from the Texas Panhandle field.

On Schedule 5 I have shown that the average potentials of the wells connected to Panhandle Eastern Pipe Line in Texas are greatly in excess of the average potentials of the wells in the rest of the field.

Q. Indicating that the—

A. Indicating that if anything there will be a greater recovery from Panhandle Eastern acreage than from the average of the rest of the Texas Panhandle field.

Q. In other words, in making this estimate, if I understand you correctly, if you erred you did so on the side of making a low rather than a high estimate?

[fol. 4249] A. That is what I attempted to do, to make a conservative estimate.

Q. Now, in addition to these assumed abandonment pressures, ranging from 150 pounds down to zero, as you have read them into the record, you have used the so-called recovery factor, have you not?

A. Yes, sir.

Q. And will you please state the effect of using the recovery factor?

A. The recovery factor in fact makes the estimate even more conservative. However—

Q. (Interposing) By how much?

Q. By 10 percent. The reason the recovery factor was used is due to the fact that as far as I know, and as far as I have been able to learn, there has never been a gas field in history which yielded all the gas which was originally in place.

The Texas Panhandle Field is no different from the other fields. There are factors which prevent the ultimate recovery of all the gas originally in place in that field. Some of these factors are the unequal withdrawal of gas, the encroachment of water, the inefficient drilling practices of some of the producers, especially in the early days of the field, the varied types of the formations from which the gas is being produced.

[fol. 4250] There are some others.

Q. Well, isn't that one reason why you use these various abandonment pressures, namely, for the purpose of stating that you are not going to recover all the gas and, therefore, you are going down to 25 or 30, or 75 or 100 pounds, rather than down to zero pounds?

A. I don't say that it will be abandoned at 150 or any other assumed abandonment pressure, or even the zero abandonment pressure.

Q. Well, I didn't mean to infer that you were, but I understood that when you used an abandonment pressure of, let us say, 50 pounds, the reason for using that abandonment pressure of, for example, 50 pounds, was because it is assumed that you will not get all of the gas out of the ground and, therefore, you will abandon at 50 pounds rather than at a lower pressure?

A. That is true, and—

Q. (Interposing) Why did you—

Mr. Wheat: Let him finish his answer.

By Mr. Littman:

Q. Have you finished your answer?

A. No, I have not.

Q. Proceed.

A. That is true, and yet, even so, you must make a further reduction for the amount of gas which will be ob-[fol. 4251] tained, if for no other reason than applying a safety factor.

Q. Well, the effect of using this 90 percent recovery factor in each instance, is the same as if you had used, instead of 50 pounds, for instance, a slightly higher abandonment pressure. Is that correct?

A. It has the same effect.

Q. Well, we will come back to the recovery factor a little later. I didn't mean to go into it quite as deeply at this point.

I wanted to be certain that I understood how this exhibit worked.

Now, will you please turn to Page 1 of Schedule 3? I would like to have you give us a description of, let us say, the first five or six lines so that we may make certain that we understand how this exhibit works. Is my understanding correct, first, that you have the company-owned and drilled Class 1 acreage in Line 1?

A. Yes, sir.

Q. An an original amount of gas shown at Column D of 540,664,200 M. c. f.? A. That is right.

Q. Now, you don't have the description "M. c. f." throughout this schedule. Am I correct in understanding that all figures are on an M. c. f. basis?

A. The heading indicates that, Mr. Littman, "abandon-[fol. 4252] ment pressure M. c. f."

Q. That heading applies to the entire schedule?

A. Yes, sir.

Q. I am sorry. Now, tell us how you secured your figure of 540,664,200 M. c. f. for Class 1 acreage. Is that shown in another schedule?

A. Yes, sir, that is shown in Schedule 2 of Exhibit 30.

Q. And there you show that you have 30,546 Class 1 acres?

A. Yes, sir, company-owned and drilled.

Q. Company-owned and drilled, Class 1. And you use for that acreage, an "original amount of gas M. c. f. per acre," as shown in Column D of Schedule 2, of 17,700 M. c. f., do you not? A. Yes, sir.

Q. And the amount of 540,664,200 M. c. f. is simply the result of multiplying the number of acres by the 17,700 M. c. f.? A. That is true.

Q. Now, is the same true with respect to the amount shown in Line 2 of Schedule 3, Page 1, Column B, of 3,700,000 M. c. f.? A. Yes, sir.

Q. And that is the result of multiplying 740 acres of company-owned and drilled Class 2 acreage by a 5,000 M. [fol. 4253] c. f. amount of gas per acre?

A. That is true.

Q. Now, will you please follow through on Page 1 from those figures?

A. The figures you have just read appear in Column B, Schedule 3, Page 1, Lines 1 and 2 of Exhibit 30.

In Column B, Line 3, the figure is the sum of the first two figures.

Q. Would you mind now, going to Column C and going across?

A. Column C is obtained by applying the 63.1 percent to the 540,664,200 M. c. f. and obtaining 341,159,110 M. c. f.

Q. [And] I correct in understanding that the amounts shown in Column B represent the original amount of gas in the ground before any drilling occurred on that particular acreage? A. Yes.

Q. Now, how did you arrive at this 63.1 percent shown in Column C? What does it represent?

A. That represents the percentage of gas which would be removed to the assumed abandonment pressure of 150 pounds.

Q. Rather an intricate calculation is required to arrive of that?

A. A formula is used, and various figures inserted in the formula and the percentage arrived at.

[fol. 4254] Q. But the sum and substance of it is that the amount shown in Column C is the amount that would be recovered if you used an assumed abandonment pressure of 150 pounds?

A. Before the recovery factor is applied.

Q. That is in Column D, is it not?

A. That is true.

Q. And there you take 90 percent of Column C?

A. That is true.

Mr. Culton: Right there, so that we may understand that, 150 pounds was the sand face pressure rather than well head pressure, wasn't it?

The Witness: That is true.

Mr. Culton: And the same is true of all of them?

The Witness: The original amount is the sand face and the remainder appearing under the abandonment pressure headings on both Page 1 and Page 2 are at the well head.

By Mr. Littman:

Q. The 150 pound abandonment pressure shown on Page 1 of Schedule 3, however, is at the well head?

A. That is true.

Q. And that is true of the other abandonment pressures? A. Yes, sir.

Mr. Culton: But the sand face was used as the base in determining percentage?

Mr. Littman: Which percentage, Mr. Culton?

[fol. 4255] Mr. Culton: 63.1. I am just asking him. I don't know myself.

The Witness: The original amount of gas in Column B of both Page 1 and Page 2 of Schedule 3, Exhibit 30, represents conditions at the sand face.

Now all the other figures on these two pages, under the general heading, "Abandonment Pressures" were calculated to the well head.

By Mr. Littman:

Q. Calculated by a formula? A. Yes, sir.

Q. Which is represented by the percentages shown for each of the assumed abandonment pressures immediately above the letters C, E, G and I on Page 1 of Schedule 3?

A. That is right.

Q. Well, will you please explain Lines 5 and 4?

A. Lines 4 and 5 are deductions made from the calculated amount of gas, due to the fact that withdrawals have been taken from the calculated amount of gas for production into the pipe lines as well as unmetered production

which is an estimated figure due to wells blowing open during the course of drilling, tests which are made, wells which are opened up and conditioned at various times during the year and that gas, you might call wasted.

Q. Did you make this estimate of unmetered gas?

[fol. 4256] A. Yes, sir, and I have a schedule in this exhibit to show how it is made.

Q. And that schedule is—

A. Schedule 4.

Q. Well, you show the results of how it was made, but you don't state there how you arrived at this particular figure.

A. I will be glad to explain it.

Q. Would you mind doing that for us?

A. In Schedule 4 of Exhibit 30, Column C, the 260,000 M. c. f. in the heading of Column C represents the gas wasted while the wells were being drilled.

There the average open flow of the wells considered was approximately 26,000 M. c. f. I assumed that each one of the wells considered blew open while drilling approximately 10 days under full open flow, or possibly 20 days under half the final open flow.

That would be 10 times 26,000 M. c. f., or 260,000 M. c. f.

In Column D I considered it reasonable to use the figure of 4,333 M. c. f. per well per year as the amount of gas wasted during conditioning of the wells, which is the amount of gas which would be blown from an average well during the course of four hours, or one-sixth of 26,000 M. c. f., four hours being one-sixth of 24 hours.

In Column E I used the figure of 542 M. c. f. which was [fol. 4257] withdrawn while the wells were being tested each year.

The 542 was [arriving] at by taking $1/48$ th of 26,000 M. c. f., or the equivalent of one-half hour of blowing open per well per year.

Line 1 of the same schedule for the year 1931, shows there were 23 producing wells. Under Column D 23 wells at 4,333 M. c. f. per well per year, gives 99,659 M. c. f. for those wells for that year.

Similarly, in Column D 23 wells tested at 542 M. c. f. per well for that year would give a figure of 12,466 M. c. f.

Does that explain it sufficiently?

Q. Yes. Well, now, the important figures on this Schedule 3, of course, would be the figures appearing in Column B, Original Amount of Gas. Isn't that correct? The whole thing is predicated upon the accuracy of the original amount of gas which you used.

A. That is the first figure and various computations are made from that figure.

Q. And if those figures are wrong, everything else in this schedule is correspondingly off, isn't it, because everything else in this schedule is predicated upon the accuracy and correctness of your original gas content?

A. It is according to what you mean by "wrong." I have stated previously that this is an estimate and that I consider the estimate conservative.

[fol. 4258] If by "wrong", you mean the figure is too low and should be higher, I will admit that.

Q. Well, I was merely undertaking to elicit that fundamentally the figures shown on Schedule 3 of the amount ultimately to be recovered on the various assumed abandonment pressures, is predicated upon the correctness and accuracy of the original amount of gas which you stated to be 17,700 M. c. f. for Class 1 acreage and 5,000 M. c. f. for Class 2 acreage. A. That is correct.

Q. Incidentally, you could have avoided the necessity of deducting unmetered and metered production from original gas content if you had determined in the first instance the present amount of gas in the acreage by determining a weighted average rock pressure, could you not?

A. Except that I do not believe a true weighted average rock pressure could be determined.

Q. And that is why you went back to the original gas content in the field—

A. (Interposing) Yes, sir. I thought I could get a much more accurate figure as to the initial rock pressure, due to the fact that the variations in the original wells as to their initial rock pressure was much less than the variations in the wells at the present time.

As I stated this morning, the variation in those initial wells was 10 pounds one way or the other, whereas pres-

[fol. 4259] ently the variations in rock pressure throughout the field go through a range of 125 pounds or 150 pounds either way from the approximate average.

Q. Now, the 17,700 M. c. f. figure of original amount of gas, does not represent recoverable gas, does it? A. No.

Q. Now, I want you to convert that 17,700 M. c. f. figure to recoverable gas reserves per acre, based on a 50 pound abandonment pressure. You can calculate that for us, can't you? There is a machine on the desk.

A. Yes. Just a minute. There would be approximately 13,668 M. c. f. per acre.

Q. Have you taken off your recovery factor?

A. Yes, sir. I have just divided the figure appearing on Schedule 3, Page 2, Line 1, Column D, 417,500,896 M. c. f. by 30,546 acres.

The only other operation that I could do quickly here would be to divide the total number of acres into the figure appearing in Line 20, Column D of 618,997,998 by 65,429, but from that you would get an average of both Class 1 and Class 2 acreage.

Q. Well, you tell me if I am wrong, but I thought that what you would do would be to take your 17,700 M. c. f. and take first 85.8 percent of that—

A. (Interposing) It can be done that way.
[fol. 4260] Q. And then, take 90 percent of that.

A. It can be done that way.

Q. That is the figure I thought you would take.

A. I arrive at the same figure, 13,668.

Q. Now, you have used the 90 percent recovery factor, have you? A. Yes.

Q. That figure would represent the original recoverable reserves per acre of Class 1 acreage, would it not?

A. No.

Q. Based on a 50 pound abandonment pressure?

A. That is the original amount before any production is withdrawn.

Q. Yes, that is what I mean, the original recoverable reserves, before any production had been withdrawn.

In other words, I was trying to get you to convert your 17,700 M.c.f. to recoverable reserves based on a 50 pound abandonment pressure.

Now, will you please make the calculation for the Class 2 acreage? In other words, convert the 5,000 M.c.f. to [fol. 4261] the recoverable figure based on a 50 pound abandonment pressure.

A. 3,861 M.c.f.

Q. For the Class 2 acreage?

A. For Class 2 acreage.

Q. Do you know what Mr. Ralph E. Davis' estimate of original recoverable reserves per acre for the West Panhandle Field was as made in this proceeding?

A. No, I don't.

Q. His estimate, as stated at transcript, Page 1529, was 18 million or 19 million feet per acre, which means 18,000 or 19,000 M.c.f. per acre, as compared with your 13,668 M.c.f. figure for Class 1 acreage and 3,861 M.c.f. for Class 2 acreage; would it be your testimony that Mr. Davis is wrong and that you are right?

A. He might be nearer right than I am.

Q. Now, will you please turn to Page 15 of your testimony in Exhibit 30, Mr. Smith? A. I have it.

Q. In the second paragraph on that page you make the following statements:

"Numerous qualified geologists have reached the conclusion that the average 'pay thickness' in the better portion of the gas producing area of the Panhandle Field is approximately 70 feet and the average porosity for such pay formation is approximately 20 percent. From [fol. 4262] these determinations they have estimated the average content in that area to be approximately 17.7 million feet per acre. I concur in that conclusion."

Is that your testimony?

A. Yes, sir.

Q. Who are these "numerous qualified geologists"?

A. Two of them are the two men who have been referred—previously, Mr. Cotner and Mr. Crum. Some others, to name a few, would be Mr. Thompson of Amarillo. I don't remember his initials.

Q. Is that T-h-o-m-p-s-o-n?

A. T-h-o-m-p-s-o-n.

Q. Would J. D. sound right?

A. I believe that is right, J. D. Thompson. And, Mr. Peterson—

Q. C. J. Peterson? A. Yes, C. J. Peterson.

Q. Anyone else?

A. I think Mr. C. Don Hughes has estimated the reserves in the Panhandle Field on this same method, using similar figures. I don't know of any other right offhand.

Q. On Page 17 of your testimony, in Exhibit 30, the fourth paragraph, you make the following statement:

"It is recognized by geologists generally that based on an average sand thickness of 70 feet and an average [fol. 4263] porosity of 20 percent, the average original content in the better portion of the field was approximately 17.7 million feet per acre at virgin pressure. It is also recognized generally by geologists that the average original content in the poorer class of acreage (in which I include wells having less than 5 million cubic feet potential open flow at virgin pressure) was approximately 5 million per acre."

Are these "geologists generally" and "generally by geologists" the same gentlemen whom you have just named?

A. Substantially.

Q. Well, are there any others that you attribute this statement to?

A. There is another one, whose name I can't remember, that had worked particularly on the value assigned to the second-class acreage.

In that value assigned to second-class acreage I refer particularly to Mr. C. Don Hughes. All those men are of Amarillo, Texas.

[fol. 4264] By Mr. Littman:

Q. Mr. Smith, we were discussing the numerous geologists upon whom you relied and to whom you referred on Pages 15 and 17 of your written testimony in Exhibit 30.

Now, those geologists did not make any tests to determine the porosity of the producing formation in any gas well in the Panhandle Field, did they?

A. I do not know positively. They certainly did a lot of studying in attempting to arrive at an average porosity figure for the field as noted in a footnote to the article referred to previously —

Mr. Culton: (Interposing) The Cotner and Crum article?

The Witness: I am going to that.

Mr. Culton: All right.

The Witness: Namely, the article written by Victor Cotner and H. E. Crum, appearing in "Geology of Natural Gas" on Page 385, there in this statement:

"The following geologists have contributed material or criticism in the preparation of this paper, to all of whom the writers express their appreciation: L. M. Oles of the Prairie Oil and Gas Company; J. D. Thompson, Jr., Consulting Geologist; W. E. Hubbard of the Humble Oil and Refining Company; T. F. Newman of the Skelly Oil Company; Frank T. Clark of the Empire Gas and Fuel Company, and Richard W. Camp of the Consolidated Gas Utilities Company."

[fol. 4265] In addition to those, an article written about 1925 or 1926 or 1927 and published in the Bulletin of the American Association of Petroleum Geologists. This article was written by C. Max Bauer. He gave his idea of the porosity of Panhandle Field and, as I remember, substantiated his deductions by listing several cores which had been taken and porosity tests run on those cores.

By Mr. Littman:

Q. Do you know the names of the wells from which these cores were taken?

A. I believe it appears in the article mentioned. I have that article in the Kansas City office, and I will be glad to refer to it and give the names of those wells if they appear in the article.

Q. Do you recall what the porosity tests of those cores revealed?

A. If I remember correctly, the average was very close to 20 percent.

Q. Now, these gentlemen whose names you read in the footnote as having contributed material or criticism in the preparation of this paper, to what paper does that footnote refer?

A. The title of the paper is, "Geology and Occurrence of Natural Gas in Amarillo District, Texas", written by Victor Cotner and H. E. Crum.

[fol. 4266] Q. You do not know what particular material was furnished or contributed by those gentlemen whom you named, do you?

A. No, sir, I do not.

Q. You do not know whether those gentlemen contributed material related directly to this so-called 20 percent porosity figure or not?

A. No, sir, I do not.

Q. Then, I take it from your testimony that you do not know the manner or method employed by these "numerous qualified geologists" in arriving at their porosity figure of 20 percent?

A. No, sir, I do not.

Q. And as you have stated, you have not made any independent investigation of your own in that respect?

A. That is true.

Q. Do you know what rock pressures these geologists used in arriving at this estimate of 17,500 M.c.f. per acre?

A. An initial rock pressure of 430 pounds well head.

Q. You know that each one used that?

A. Yes, sir.

Q. The pay thickness you have already described, have you not, with respect to their method?

A. Yes, sir, it was very close to 70 feet, perhaps 69½ or 71, but very close to 70 feet.

[fol. 4267] Q. You have never examined any of the working papers of these geologists, have you?

A. No, I have not.

Q. Isn't it a fact, Mr. Smith, that Cotner and Crum have never made any porosity tests?

A. I cannot say as to that.

Q. Did you rely upon a report written by them which appears in the American Association of Petroleum Geologists Bulletin?

A. I referred to that and that report possibly influenced my decision to use this method.

Q. And what is the date as of which that paper that you referred to was written?

A. It was originally published in August, 1933, and revised in 1935.

Q. And none of these geologists that you have mentioned have ever made any porosity studies or pay thickness studies with respect to the acreage controlled by Panhandle Eastern Pipe Line Company, is that correct?

A. Not as far as I know.

Q. Now, in order that I may understand your exhibit, I would like to have you explain the method used by you in arriving at the Class 1 and Class 2 acreage.

A. Exhibit 31, showing the initial open flow on a map of the Texas Panhandle gas field, the Class 1 acreage is that [fol. 4268] located in all the various classifications from 5 million cubic feet per day to above 40 million cubic feet per day.

The Class 3 acreage is that located in the classification below 5 million cubic feet per day.

Q. Now, your Exhibit 30 does not show the names of the particular leases which you classed as Class 2 and Class 1, do they?

A. That is true.

Mr. Culton: You said Exhibit 30. Did you mean 30 or 31?

Mr. Littman: I mean, his Exhibit 30. His written testimony and schedule. 31 is a map.

By Mr. Littman:

Q. Nor do your working papers show the list of acreage so classed?

A. No, sir.

Q. Do you have such a list?

A. No, sir, I do not. The reason I did not make such a list is because there is a very small amount of acreage in the Class 2 and, by comparison of the present acreage map with Exhibit 31, it can readily be determined which acreage lies in the Class 2 classification and, of course, the remainder lies in the Class 1.

Q. Now, the Class 2 acreage lies where with respect to the map, Exhibit No. 31 for identification?

A. In the gray area on Exhibit 31.

[fol. 4269] Q. You mean in the uncolored area?

A. No, the gray area.

Q. The gray area, within the heavy blue line, is that right?

A. Yes, sir.

Q. Do the various lines of demarcation, as indicated by the coloring on this map show the lines of demarcation with respect to the various open flows within each color class?

A. As shown by the legend here, the wells having an open flow above 40 million are in the areas colored yellow.

The wells have open flows from 25 to 40 million are in the areas colored green.

The wells having open flows from 10 to 25 million cubic feet per day are located in the areas colored red.

The wells having open flows from 5 to 10 million cubic feet per day are in the areas colored blue, and the wells having open flows below 5 million are in the areas colored gray.

Q. Thank you. Did you prepare this map, Exhibit No. 31 for identification?

A. It was prepared under my direction.

Q. Who originally prepared it?

A. Mr. C. Don Hughes.

Q. He is a geologist of Amarillo, Texas, is he?

A. That is true, a consulting geologist.

Q. And you made some changes in respect to the original Map which was prepared by him?

A. A few minor changes.

Trial Examiner: The basic map is a commercial map, isn't it?

The Witness: No, I do not believe it would be called a commercial map. It was one which Mr. Hughes supplied me, loaned me, you might call it.

By Mr. Littman:

Q. What, if anything, did you personally have to do with the determination of the open flows that appear on this map?

A. You mean in testing the wells?

Q. No, I meant whose data is reflected on this map?

A. The data taken from official Railroad Commission tests.

Q. Was it taken by Mr. Hughes or by yourself?

A. It was taken by neither of us.

Q. I do not mean the original test that was taken. I mean, who actually decided where the colors were to go and what particular areas were to be included within the 40 million cubic feet class and the 25 to 40 million cubic feet class, and so forth?

Trial Examiner: In other words, who laid out the boundary lines of the pressure zones?

The Witness: Mr. Hughes did originally, and I spot [fol. 4271] checked the map by reference to records I had of the initial open flow of various wells, and where I found inaccuracies in Mr. Hughes' map, I made revisions.

By Mr. Littman:

Q. Did you make a check of the original data from the original source which was the Texas Railroad Commission?

A. The figures that I used were tests from the Railroad Commission of the initial open flow of these various wells.

Q. Now, do you know, as a matter of fact, that all the wells included within the blue area, for instance, which is classed by you as 5 to 10 million cubic feet are, in fact, wells that do not exceed 10 million and do not go under 5 million?

A. Generally speaking, yes. By generally speaking, I mean this: That I spot checked it. I did not check every single well whose location appears on this map, but I did check at random wells which appear on the map, to determine in a general way whether or not these lines were accurate.

Q. Well, it is a fact, is it not, that some of the blue areas contain wells whose open flow exceeds 10 million cubic feet?

A. That could be true.

Q. In other words, you did not undertake by this map to be so exact as to exclude all wells beyond and below the amounts shown for each class?

[fol. 4272] A. I did not include any wells in an improper classification on here that I found to be in an improper classification.

Mr. Culton: Did you check all of the Panhandle Eastern's wells?

The Witness: I did check all of the Panhandle Eastern's wells in regard to this classification.

By Mr. Littman:

Q. You do not show the open flows of the individual wells anywhere in your exhibits from which data on this map was made?

A. No.

Trial Examiner: May I ask, Mr. Smith, what publications are currently issued by the Texas Railroad Commission with reference to the Panhandle Field?

The Witness: Annual Reports are issued which contain summaries of activity in the Panhandle oil and gas field during the year subsequent to the issuance of the Reports.

Trial Examiner: You mean, the year preceding?

The Witness: The year preceding the issuance of this Panhandle oil and gas field report.

Trial Examiner: How long has it been customary to issue such reports?

The Witness: I believe, since about 1936.

[fol. 4273] Trial Examiner: We had in this hearing the series of reports since they began to issue them [would] it did not give us a great deal of official data with reference to development of the field as a whole?

The Witness: Yes, sir.

Mr. Culton: Mr. Examiner, I do not know whether those are all available or not. If they are not at the Commission's office, I happen to have a personal file, I think, of every one that has been issued, and I will be very glad to make them available to the Commission.

Trial Examiner: I think we might appreciate that, Mr. Culton. Of course, it is not my thought in making the suggestion that any great part of it would be incorporated into the evidence, but there might be some part that will be material to incorporate into evidence, and it would be advantageous if we might all have them for reference during the further hearing.

Mr. Culton: The Commission probably has a set. Claude Brown, I know, had a set several years ago, and I assume the Commission probably has received those issues in the last two or three years, but I will see to it that we do have a set available in this case for any use as he desires to make of them.

Mr. Gorman: May I inquire whether that is the general report of the Railroad Commission, or is that a specific [fol. 4274] report on the gas field?

Mr. Culton: That is their annual Panhandle Field Report.

Mr. Gorman: I think we probably have that in our library, Mr. Examiner.

Trial Examiner: Do you know whether the Commission issues any other periodic reports relating to this field and, if so, what they have been to date?

The Witness: They issue annual schedules of the tests on all wells in Panhandle Field, setting forth the open flow potential of the well for that year, the rock pressure and the proratable acreage under that well, together with the location and number and company owning the well.

That is done once each year. From time to time, they also issue other reports, not regularly, however, which summarize these annual open flow and rock pressure schedules.

Trial Examiner: Is a license for drilling required to be filed which is followed by the filing of the log of the wells now being drilled?

The Witness: Yes, sir.

Trial Examiner: So the Commission has logs of all wells?

The Witness: They have attempted to get logs of all wells and they have, I think, 99 percent of them.

Mr. Culton: I will say, Mr. Examiner, until a few years back, there was no requirement that those logs be filed with the Commission but, for a few years, it has been a requirement [fol. 4275] to have the logs filed with the Commission.

Trial Examiner: And that has enabled you to check and have fairly reliable data?

Mr. Culton: On all wells that have been drilled in recent years, logs are available, I think.

I have known of a few instances, and one of them relates to one of our gas purchase wells, it is one of the Navajo wells—

Trial Examiner: Some of these records of the Railroad Commission might be of considerable use to us, and I wanted to ask further whether they also require reports on abandonment.

The Witness: Definitely, they do.

Trial Examiner: And do they issue those reports, or are they included in any publication they issue?

The Witness:—In the back of this 1940 Report, there is a section devoted entirely to wells having been abandoned during the past year.

Other reports contain similar information of that kind.

Trial Examiner: Do the maps and charts included in these annual reports indicate the field extensions?

The Witness: To a certain extent, but it is not very accurate, Mr. Examiner, because they are on such a small scale.

Trial Examiner: But the basic data is doubtless included?

The Witness: Yes, sir.

[fol. 4276] Mr. Gorman: I wonder, Mr. Examiner, as a matter of general information if you would be interested in having Mr. Culton or Mr. Smith give you a short, general summarization of the proration law which is in effect in Texas, which might indicate to you the information which the Railroad Commission does require of producers in that State?

Mr. Culton: I can give it in about one sentence.

Trial Examiner: It would be very much appreciated, and I think it is also material.

Mr. Culton: There is a proration law in Texas applying to sour gas. There is no proration law in Texas applying to sweet gas, that law having been held to be invalid by the Supreme Court of the United States in so far as the sweet gas is concerned, in a case in which I participated.

The opinion was written by Justice Brandeis.

Trial Examiner: What was the case?

Mr. Culton: Thompson versus Consolidated Gas Utilities Corporation, decided about January, 1936, or 1937 in the Supreme Court.

Trial Examiner: Do you have the citation?

Mr. Culton: No. I have lost track of the notices of the Law Edition, but I think it is the 83d Law Edition. We can get the exact citation and we will be glad to furnish it in the record.

Trial Examiner: That does not, however, necessarily [fol. 4277] represent the law as pertaining to this particular problem.

Mr. Culton: I just started to remark, Mr. Examiner, that although it is not required by any proration law, there are other statutes giving the Railroad Commission of Texas general supervision over the drilling and operation of both oil wells and gas wells, including authority to the Railroad Commission to promulgate regulations with respect to drilling, producing and abandoning all of those wells.

In compliance with that statutory provision, the Railroad Commission of Texas has promulgated rather a large number of rules dealing with those subjects, and those rules are at this time, and for several years past have been, pretty well followed in the Panhandle of Texas.

The Witness: Mr. Culton, isn't there one provision which restricts the production to 25 percent of the open flow?

Mr. Culton: The law restricts the production to a maximum of 25 percent of the open flow, but that is not a proration proposition. That is an absolute maximum production.

The properties of Panhandle Eastern Pipe Line Company are all located in the sweet gas area, so the proration regulations of the sour gas area do not apply to any of Panhandle Eastern's wells.

For several years past, the Commission has adopted the policy of taking these tests every summer in the Panhandle, the tests of the potential producing capacity of the wells [fol. 4278] and the tests of the existing pressures.

These field boys can check me on this, but I think they have done that every year for several years.

Have they skipped a single year?

The Witness: No, I do not think so.

Mr. Culton: I think that they have made those tests every year. It is quite a job. They have quite a good many different men employed in it, usually getting boys who are taking courses in petroleum engineering at the different schools and universities in the State.

The Witness: As a matter of fact, for one or two years, they took two tests during the year. I think another thing might be added, and that is the fact they changed their method of testing last year from the pitot tube method to the back-pressure method.

Mr. Culton: That is for testing open flow capacities.

The Witness: Open flow capacities, and also they require that no more spring gauge rock pressure tests be made but all rock pressure tests be made with dead weight gauges.

Mr. Culton: All those changes tend to make more certain the results attained. That is, that character of test is likely to be more consistent than other types of tests.

The Witness: They will be very much more consistent and also will indicate more nearly that which the open flow test pretended to indicate. By that I mean, the ability of [fol. 4279] the well to produce.

[fol. 4280] By Mr. Littman:

Q. What character of open flows are reflected on your map, Exhibit No. 31?

A. All pitot-tube open flows.

Q. Are they the original open flows or the open flows at some dates after the original drilling?

A. They are original open flows, initial open flows.

Q. They are the initial open flows?

A. Yes.

Q. At what rock pressure?

[fol. 4281] A. At the rock pressure at the time the well was drilled.

Q. Isn't it a fact that that map purports to represent a conversion of these open flows to a 430-pound rock pressure?

A. That is true. My first answer was incorrect. They are converted to the initial rock pressure of the field.

Q. I am sorry, but I did not quite get the last part of your answer. Suppose you explain the conversion and what this map actually shows with respect to the open flows?

A. It shows the initial open flows of the wells drilled throughout the field, corrected to the initial rock pressure of the field of 430 pounds.

Q. And who made the calculation with respect to the correction?

A. Mr. Hughes.

Q. Do you know how Mr. Hughes made that calculation?

A. Not exactly, no. I presume it was made by direct proportion that if the present pressure is 400 pounds and the open flow is 10 million, then the initial open flow would be 430 over 400 times 10 million.

Mr. Culton: Is there a Bureau of Mines correction factor applied, or do you know about that?

The Witness: It probably was. I do not know for sure.

By Mr. Littman:

[fol. 4282] Q. Well, isn't it a fact that Mr. Hughes used what is known as a type curve to convert these open flows to 430 pounds rock pressure?

A. That is right.

Q. Would you mind stating now what the fact is with respect to how Mr. Hughes determined the open flows?

A. I am not entirely familiar with that curve. However, I do know he used that curve in making his corrections to the initial pressure.

I do not know the mathematical operation through which he went to make the correction.

Q. Do you, of your own knowledge, know whether the curve utilized by Mr. Hughes was a proper curve for the purpose?

A. It seems to me that it was a curve in a publication by the Bureau of Mines. I am not sure of that.

Q. Isn't it a fact that the curve was based on the wells of Texoma?

A. I do not know.

Q. You do not know whether it was based on 1943 of Texoma Company wells, do you?

A. I do not know.

Q. Well, at any rate, you then utilized this map for the purpose, among other things, of arriving at your Class 2 acreage which had an original gas content of 5,000 M. c. f. per acre?

[fol. 4283] A. Yes, estimated.

Q. Why do you use the 5 million open flow basis of determining this Class 2 acreage? What relation does that have to the amount of gas in that acreage?

A. That is just an estimated figure, that it would be approximately that.

Trial Examiner: Isn't this merely a reclassification of your lands in the light of drilling experience?

The Witness: To a certain extent, Mr. Trial Examiner, the marginal acreage, in my opinion, would be much below the more prolific acreage and the classification merely divides it between the marginal and the average or above average of the field.

For that reason, I selected the 5 million per acre as an approximate figure for the marginal acreage.

By Mr. Littman:

Q. It isn't a very good reason, is it?

A. No, it is not.

Mr. Culton: How many acres are involved?

Trial Examiner: It is small.

The Witness: 1,920, three sections.

By Mr. Littman:

Q. Out of a total of how many acres?

A. 65,429.

[fol. 4284] Trial Examiner: By the way, there is one question I want to ask you that I forgot.

Has the United States Bureau of Mines made any extensive investigation of the Panhandle Field and issued publications based on their study?

The Witness: I am not familiar with them. I am sorry.

Trial Examiner: You do not know of any?

The Witness: No, I do not.

Mr. Culton: I have not seen any, and Dr. Bartle, who watches that closely in his line of work, informs me he has seen none.

Trial Examiner: There would be no other Governmental agency that would have studied that?

Mr. Culton: That is right.

By Mr. Littman:

Q. Mr. Smith, you cannot tell how much gas is contained in an acre by looking at the open flow, can you?

A. No.

Q. Am I correct in understanding—I might say that I have learned what little I know about this very recently—that the open flow merely tells you something about the ability of a well to produce gas?

A. From a relative standpoint. That is, if a well has an open flow of 5 million cubic feet per day, and another well has an open flow of 25 million cubic feet per day, you [fol. 4285] will conclude from that that one well produce about five times as much as the other in one day.

Q. That is, it is a function of time, is it not?

A. Yes, sir.

Q. Rather than amount of reserves. Open flow has to do with permeability, has it not?

A. A great deal.

Q. Another way of stating it is, it has to do with conductivity?

A. The ability of the gas to pass from its initial place into the well bore.

Q. That is right. In other words, if you had nothing before you other than an open flow reading, no matter how correct that reading may be, you could not estimate from that open flow the content of the gas in any particular acre, could you?

A. I think not.

Q. Then your estimate of this Class 2 acreage was not, in fact, based upon any given porosity or any given sand thickness, was it?

A. No, sir.

Q. That so-called porosity method holds true only for the Class 1 acreage?

A. That is true.

Q. And as you have indicated, there was not very much [fol. 4286] Class 2 acreage?

A. That is true.

Q. Approximately 1,700—

A. (Interposing) 1,920.

Q. 1,920 acres, and you did not use the open flow figures at all in estimating your reserves for the Class 1 acreage, did you?

A. No, sir.

Q. Now, I would like to have you explain for us, in theory, the porosity method of determining gas reserves. I want you, Mr. Smith, to assume a given area, let us say, one acre, and I would like to have you tell us what measurements you would have to have in order to determine exactly how much gas is in the hypothetical acre.

A. I would have to know the porosity of the producing formations.

Mr. Lee. May I bother you just a moment there. Would you mind defining that term "porosity"?

The Witness: Porosity is the percentage of void space in a unit volume of formation.

Mr. Gorman: Is that an open space as distinguished from solid matter?

The Witness: That is true.

Mr. Littman: Let me ask you, if we had a box full of ping-pong balls, the spaces between the balls would represent the porosity of that container, would it not?

The Witness: That is true.

Mr. Lee. Well, may I just ask another question, from the standpoint of a man in the street trying to get some knowledge of the subject?

The Witness: Certainly.

Mr. Lee: Does the open space within the given area—how does that become a yardstick or a standard of measurement as applied to the probable capacity of the well, and I will go just one step further, is it because in that open space there is an area for the gas?

The Witness: Which is favorable for the accumulation of gas.

Mr. Lee: Repeat that—which is what?

The Witness: Which is favorable for the accumulation of gas. There is a reservoir in that formation.

By Mr. Littman:

Q. In other words, Mr. Smith, if you had a very hard granite, the porosity of the granite would be zero, would it not?

A. As a usual thing, granite has no porosity. It is very dense. There is no pore space in there. There are no voids.

Q. And; therefore, it cannot be expected to hold gas or anything else?

[fol. 4288] A. That is true.

Q. That would be the zero extreme, would it not?

A. That would be the zero.

Q. And if you have a cavern in the ground, that would represent 100 percent porosity because every cubic foot of the cavern could hold gas?

A. That is true.

Q. Now, will you please give us the theory of the porosity method? We have a theoretical, hypothetical acre, and we want to know exactly what we would have to have in order to determine precisely how much gas is under that acre.

A. We would have to have the percentage of porosity.

Q. Of every cubic inch of producing sand in that acre? I am talking about theory now, Mr. Smith.

A. Theoretically, yes, for an absolute determination.

Q. That is right.

A. We would have to have the thickness of the formations which contained this porosity, the exact thickness.

Q. And which contains the gas?

A. Down to the millionth of an inch.

Q. That is right. What else would you have to have?

A. We would have to have the pressure of the gas in that void space under this acre at every point, every square centimeter of the acre.

[fol. 4289] Q. The weighted average—

A. (Interposing) No, we would have to know the uniform pressure.

Q. And that is, of course, because this sand will contain more gas if it is compressed?

A. That is true.

Q. And thereby, a greater pressure?

A. That is true. We would have to know whether that pressure is the same at the top of the producing formation as it is at the bottom of the producing formation, which it probably is not.

We would have to know all about every cubic centimeter or millimeter of the producing formations under that acre of ground. Of course, that is absurd. It is an impossibility.

Q. Well, perhaps I should not have taken an acre, perhaps I should have taken a given container and propounded my hypothetical question because I wanted to make certain that I understood the theory of the method.

At any rate, the more accurate your information in regard to (1) porosity; (2) thickness of sand and (3) pressure, of course the more accurate your estimate of reserves, is that true?

A. That is true of every problem. The more accurate your information the more accurate your result.

[fol. 4290] Q. Now, nobody knows, as a matter of fact, what the porosity is of the Panhandle Field or any other field, do they?

A. That is right. Until the field is finally produced, the last drop of gas is taken from it, then—

Q. (Interposing) Then it is too late.

A. It is too late; and you would also have to know exactly the thickness of all of those pay formations then.

Trial Examiner: While you are on that, haven't you had any outcrops of any of these formations?

The Witness: The outcrops would not show any porosity, Mr. Examiner.

Trial Examiner: No information can be gained that way, then?

The Witness: Not as to percentage of porosity, no, sir, because if there was porosity and permeability in the outcrop, the gas would have escaped probably ages ago.

Trial Examiner: I was thinking of the geological formations themselves.

The Witness: These formations do outcrop and the outcrops have been studied.

Trial Examiner: That is what I had in mind. Isn't that your starting point in estimating porosity in the ground?

The Witness: No, sir.

Trial Examiner: Where you have that?

[fol. 4291] The Witness: No, sir.

Trial Examiner: In comparing your own formation of the outcrop with the cuttings from the wells, isn't that the method used?

The Witness: That is our method of correlating the geologic age of the formation from which the gas is produced but it would not contribute to our knowledge of the formation where the gas reservoir exists.

Mr. Culton: In that connection, Mr. Examiner, I happen to have some photographs taken of the outcrops of the Granite Wash in Oklahoma.

The worst trouble about them is that I happen to be shown in some of the photographs—I am the straw man—I also have some samples of Granite Wash taken out of the outcrop in the different stages of decomposition.

I shall bring a set over and let the Examiner look at them tomorrow and I will bring some samples of the Granite Wash in different stages of decomposition when I come back from Amarillo.

I can appreciate that the Examiner has a little curiosity about those, just like I did.

By Mr. Litman:

Q. Now, you have already testified that, in order to determine the porosity accurately, you must have cores tested in the laboratory, have you not?

[fol. 4292] A. Yes. Even then you would not have exact figures.

Q. But if you want to come even close, you have got to take the cores out and test them in the laboratories, isn't that right?

A. Yes.

Q. And cores, as such, have never been taken from the true producing sand in the Amarillo Field, have they, as far as you know?

A. I won't say that. I would say that probably the cores have not been taken from all of the producing formations in the Amarillo Field, but when you say true producing formations, I do not agree.

Q. By "true," I meant the more highly productive.

A. That is probably true.

Q. In other words, when you do get a core, you get about the worst part of the pay sand, do you not?

A. The part contributing the least gas.

Q. By reason of the fact that it will hold together since it is not very porous?

A. That is true.

Q. And then, after you get the core out and you do look at it and you know, in the first place, that it does not represent the most representative portion of the pay sand and after you do make laboratory tests of it, well, then what do you have?

[fol. 4293] A. You have the porosity in a very limited area.

Q. In other words, you then know the porosity?

A. Of the cores.

Q. Of the core that you have, and you cannot testify nor can anyone else testify, as to the porosity one foot or two feet away, isn't that right?

A. That is true. That is one reason why we apply that 90 percent of recovery factor, because of the variable condition of the reservoir, that the porosity is one thing one

place and another thing another place and, consequently, all of the gas can never be gotten out of the reservoir because permeability does not exist which is favorable to getting the gas out of the reservoir.

Q. It might be 10 percent up, rather than 10 percent down, might it not?

A. It might.

Q. But your estimate reflects the downward trend wholly and solely, does it not?

A. My estimate, as I said several times, is conservative.

Q. Well, now that we have discussed porosity—incidentally, you do testify, do you not, that great variations are found as to porosity throughout the entire field, the Panhandle Field?

A. Absolutely, from zero to 100 percent.

[fol. 4294] Q. And you have offered in evidence a number of exhibits that demonstrate that fact, have you not?

A. Yes, sir.

Q. And those exhibits are two sand graphs which I think are designated as Exhibits 28 and 29 which show the situation with respect to 34 wells, is that correct?

A. That is right.

Q. And, as a matter of fact, you say at Page 16 of your written testimony, do you not, that:

“These graphs clearly demonstrate that the productivity of the wells does not always increase in the same proportions as it increases in aggregate pay thickness which necessarily means that in the different pays encountered, varying percentages of porosity exist.”

Is that your testimony?

A. That is right.

Q. Then the next thing you have to have to be accurate is a good determination of the thickness of pay stratum or strata, is that right?

A. That is right.

Q. You cannot be very sure about that either, can you, Mr. Smith?

A. No, you cannot.

Q. As a matter of fact, there are great variations throughout the Panhandle Field in thicknesses of pay, are there not?

[fol. 4295] A. That is correct.

[fol. 4301] RUFUS M. SMITH a witness, having been previously sworn, resumed the stand and testified further as follows:

Cross-Examination (Continued)

By Mr. Littman:

Q. Mr. Smith, at the close of yesterday's session, we were discussing the "numerous qualified geologists" referred to by you on Page 15 of your written testimony in Exhibit 30, and "geologists generally" referred to by you in your testimony on Page 17 of that exhibit.

Also, we were discussing the average thickness of the producing sand, commonly called "pay thickness" in the Panhandle Field.

Now, it goes without saying, does it not, Mr. Smith, that the thicker the pay sand, the higher the estimate of gas reserves by your method. Is that correct, generally.

A. That is true, providing the porosity remains the same throughout the thicker section. Assuming that the porosity is uniform, it would naturally follow that you would have a greater content of gas in the thicker pay section.

Q. Well, if you had used an average sand thickness in excess of the thickness which you did use of 70 feet, then [fol. 4302] under your method you would have estimated a higher gas reserve content, would you not?

A. That is true, if I still used the 20 percent porosity.

Q. Yes, and you did use the 20 percent porosity, did you not?

A. Yes, sir.

Q. Now, I believe you stated yesterday that one of the geologists upon whom you relied was a Mr. C. J. Peterson, is that correct?

A. I had read some of the results of some of his studies.

Q. And did he arrive at the conclusion that the average pay thickness was 70 feet?

A. Approximately that thickness.

Q. Now, he is then one of the authorities upon whom you relied for the purpose of using the 70-foot average pay thickness, is that correct?

A. That is correct.

Q. Mr. Smith, do you know to what field or fields this 70-foot pay thickness of Mr. Peterson's applied?

A. The West Panhandle Field.

Q. I take it from your answer, that it is your understanding that Mr. Peterson's 70-foot average did not embrace the area commonly known as the East Panhandle Field?

[fol. 4303] A. That was my impression.

Mr. Littman: If your Honor please, I think Exhibit 76, which was presented by Mr. Davis, contains a map of the Texas Panhandle Field that might be helpful for our purposes, inasmuch as it is a fairly small and concise map, and I would like to make reference to it now.

By Mr. Littman:

Q. As I have just stated, Mr. Smith, this is one of the maps presented in Exhibit 76 by Mr. Davis. Does the map, so far as you can observe it here before you, correctly show the general outline of both the West and East Panhandle Field?

A. Generally, speaking, yes.

Q. Now, will you please point out for us on this map the line of demarcation between the so-called West and East Panhandle fields?

A. The line of demarcation between the West and East fields is a line approximately the center of Gray County, running north and south.

Q. Now, Mr. Davis has shown on this map the general location of the leaseholds of Panhandle Eastern Pipe Line Company, and those of the gas vendors in red and green blocks.

Does Mr. Davis' colors showing that acreage coincide, generally, with your understanding of where the acreage is [location]?

Mr. Culton: That is what year?

[fol. 4304] Mr. Littman: July, 1939.

The Witness: There have been probably some revisions since that time of a minor nature, but since the map is

rather small-scale, I can only say that it is approximately the location of the various blocks of acreage owned or controlled by Panhandle Eastern Pipe Line Company.

By Mr. Littman:

Q. Yes. Mr. Smith, I do not propose to hold you exactly to these blocks, but I did want to use this map for our purposes here because it is small and does show the entire picture on one small page.

What I am getting at specifically is, Panhandle Eastern does not hold or control any acreage in what is known as the East Panhandle Field, does it?

A. That is correct.

Q. And, as a matter of fact, does not own or control any acreage for a considerable distance to the west of the line of demarcation between these two fields, does it?

A. That is correct.

Q. Can you tell me approximately the distance between the line of demarcation between the East and West Panhandle fields and the point at which Panhandle Eastern's acreage commences in the West Panhandle Field?

A. I would estimate it to be 35 or 40 miles.

Q. And, as a matter of fact, the bulk of Panhandle [fol. 4305] Eastern's acreage is located even further west of that line than the 35 miles, is it not?

A. Yes.

Q. Now, am I correct in understanding that Panhandle Eastern's acreage is located, that is, in the Panhandle Field, generally in the southern portion of Moore County, in the northern portion of Potter County, in the northwestern portion of Carson County, and some in the extreme southwest section of Hutchinson County, is that correct?

A. That is correct.

Q. There is a little acreage in what is known as Hartley County, but that is rather insignificant, is it not?

A. Yes, sir.

Q. Now, is it not a fact, Mr. Smith, that the pay thickness in the East Panhandle Field is considerably less than the thickness in the West Panhandle Field?

A. I believe the average pay thickness in the East Field is less than the average pay thickness in the West Field.

Trial Examiner: While you are discussing the West Panhandle Field, referring to Davis' map contained in Exhibit 76, I wonder if you can give us a statement about the other major producers of gas adjacent to the Panhandle properties in the locations which you have designated?

The Witness: You mean by that, Mr. Trial Examiner, the names of those companies?

[fol. 4306] Trial Examiner: Yes.

The Witness: In Carson County, Cities Service has considerable acreage adjacent to Panhandle Eastern acreage.

Mr. Culton: Where does that line go to? The Examiner would probably like to know in connection with each of those companies, roughly where the line goes to, I assume.

Trial Examiner: Yes. Of course, it is evident from this map that you have a possibility, in view of your location, of a sharply competitive situation, and I thought this would be a good time to develop the nature of that possibility.

The Witness: The Cities Service line goes from their leases in Carson County, generally speaking, through Oklahoma, Kansas, their largest market being served, I believe, is Kansas City, Missouri.

Trial Examiner: I am not thinking of that Mr. Smith. I would just like to know the names of the companies that occupy the area disclosed by this shaded portion of the map in Exhibit 76, in a general way without too much detail, confining your statement to what you have described as the West Panhandle Field.

The Witness: In addition to the Cities Service, the Texoma Gas Company holds leases in the same section of Carson County where Panhandle Eastern's acreage is held.

Trial Examiner: May I ask, is that production designed for the Denver market or some other market, just a broad notation.

[fol. 4307] The Witness: Texoma is designed for the Chicago market, I believe.

Trial Examiner: Just state, generally, what the market is, and proceed.

The Witness: In addition to that, Texoma has acreage adjacent to Panhandle Eastern's acreage in southern and central Moore County.

Canadian River, whose lines go to Denver, holds acreage adjacent to Panhandle Eastern's acreage in northern Potter County and [southwestern] Moore County.

In Hutchinson County, Panhandle Eastern's acreage is adjacent to acreage which supplies gas to various carbon black plants.

Trial Examiner: That is getting on the edge of the sour gas, is it not?

The Witness: Yes.

In central Moore County, Panhandle Eastern's acreage is adjacent to Phillips Petroleum acreage, Shamrock Oil and Gas Corporation acreage, which serves gasoline plants and carbon black plants in Northern Moore County.

I believe that is generally the picture.

Trial Examiner: Thank you.

Mr. Culton: Did you give the picture for the Canadian line to Denver?

[fol. 4308] The Witness: Yes.

Mr. Culton: And also the South Plains line?

The Witness: I did not give the South Plains line.

Mr. Culton: It is just the same acreage. The same acreage serves South Plains and the Denver line.

The Witness: And Red River also comes in that category, and the West Texas Gas Company also comes in the same category.

I do not know just where those [line] go to. Perhaps Mr. Culton could clear that up.

Trial Examiner: That is gas produced by which company?

The Witness: It is in the same picture as the Canadian River Gas Company.

Mr. Culton: Points on the South Plains.

The Witness: Numerous small communities.

By Mr. Littman:

Q. Mr. Smith, can you state what markets are served from the East Panhandle Field, generally? The Lone Star Gas Company is one of the companies that takes gas from Wheeler—

A. (Interposing) Lone Star, Shamrock Oil and Gas Corporation has some acreage over there in the East Field.

I believe Cities Service has some acreage over there in the East Field. There are a number of smaller companies which have acreage over there. A great deal of it, as I understand, is used for serving gasoline plants.

[fol. 4309] I do not know of any long-distance pipe lines which go from the East Field.

Mr. Culton: Consolidated goes to Wichita?

The Witness: Consolidated Gas Company goes to Wichita, Kansas.

Mr. Culton: And Lone Star and United. Have you ever done any work in the East Field at all?

The Witness: No, I have only kept track of the East Field in a very general way.

Trial Examiner: Is the Chicago area served at all from the West Panhandle Field, Mr. Smith?

The Witness: Entirely.

By Mr. Littman:

Q. Mr. Smith, do you have with you the article written by Mr. C. J. Peterson upon which you relied and to which you referred yesterday? A. No, I do not.

Q. Mr. Smith, I hand you a photostatic copy of a paper entitled, "Details of Data Used in Exhibit No. 43; C. J. Peterson, Witness as Requested by Federal Power Commission.

A. List showing Areal Divisions and Name, Location and Thickness of Gas Pay's in 627 Gas Wells Used in De-

termining Average Weighted Thickness of Gas Pay in Best Commercial Gas Area—Texas Panhandle. Pages 1 through 26.

[fol. 4310] "H. Explanation and Calculation of Weighted Thickness of Gas Pay Per Acre—In Best Commercial Gas Area, Texas Panhandle Field. Pages 27 and 28."

A photostatic copy of Mr. Peterson's Exhibit No. 219 in the case commonly called the Canadian River Case which was heard by the Federal Power Commission in the past year. I hand you this exhibit.

Mr. Culton: We offer it in evidence without having read it.

Mr. Littman: Let's talk about it a little bit, first.

By Mr. Littman:

Q. Now, I believe you will find on Page 28, a summary of the various pages of that exhibit, and at the foot of that page, you will note that Mr. Peterson has the following: "70 feet used." Do you see that? A. Yes, sir.

Q. Now, I want you to look at that summary page and the rest of the exhibit, and tell me whether or not Mr. Peterson did, in fact, arrive at that 70 feet of pay thickness by averaging in the pay thickness of the East as well as the West Panhandle Field.

A. Apparently he did.

Q. And that is contrary to the understanding which you had a few minutes ago, is it?

Mr. Culton: This witness has not said he has ever seen [fol. 4311] this instrument before.

The Witness: This is the first time I have ever seen this. I did not know it existed, in fact.

However, we have not any quarrel about the pay thickness of the West Panhandle Field.

I have repeatedly said that my 70-foot figures which I used for the pay thickness was very probably low, less, if anything, than the actual pay thickness.

By Mr. Littman:

Q. Well, the 70 feet that you used would more nearly represent Mr. Peterson's conclusion with respect to the

thickness of the entire Panhandle Field, both West and East, is that right?

A. Apparently, from the exhibit which you have just shown me.

Q. And that is contrary, is it not, to the understanding that you had of Mr. Peterson's conclusions a moment ago, when you said, I believe, that Mr. Peterson's pay thickness of 70 feet was based upon the West Panhandle Field?

A. Well, perhaps Mr. Peterson has revised his idea. The material to which I referred was not this material and I am reasonably sure that the material to which I was referring stated that he considered 70 or 72 feet as the average of the west Panhandle Field.

Q. That is, of course, contrary to what you see before [fol. 4312] you here?

A. That is true, but he may have revised his opinion or done further work and further study and got different results.

Q. Well, do you know the date of Mr. Peterson's article, the one to which you just referred a moment ago?

A. I believe it was about 1939, the one I was referring to.

Q. Then the revisions that Mr. Peterson made, as reflected in his Exhibit in the Canadian River Case—

A. (Interposing) Would have been made in the last two or three years.

Q. And you were not aware of these revisions?

A. I was not.

Q. Now, referring to Page 28 of Mr. Peterson's exhibit it is obvious from that page which [summarizes] the data appearing in the first 26 or 27 pages of that exhibit, that the average pay thickness in the sweet gas area of the West Panhandle Field is greater than the 70 feet average for the entire Panhandle Field, both East and West?

Mr. Culton: Just a minute. I have not seen that, but I am willing to say that counsel is misquoting it. Doesn't he say that that is the better part of the Panhandle Field? It doesn't say the field as a whole.

"In the best commercial area of the Texas Panhandle Field."

[fol. 4313] It doesn't say the entire field. He is just selecting the best part of it for that computation.

Mr. Littman: Yes, the best commercial gas area of the entire Panhandle Field, both West and East, is that correct?

The Witness: That is what it says.

By Mr. Littman:

Q. And your Class 1 acreage represents all except, I believe, 1900 acres of Panhandle Eastern's acreage?

A. That is true.

Q. Also in the best commercial area, is it not?

A. It includes considerable of the mediocre, but not the poorest. My second classification is only the poorest acreage, but my No. 1 classification includes the best and the mediocre acreage, if you would break it down into three classes.

Q. Well, do you know what Mr. Peterson means when he refers to "best commercial gas area"?

A. I would assume that he means the area from which the greatest per acre return will be gotten.

Q. But you did not make any investigation of what he meant? A. No, sir, I did not.

Q. But you did use his average pay thickness?

A. From a former article.

Q. I do not remember which you answered the question [fol. 4314] that I put to you a moment ago about Page 28, or not. I shall ask it again.

A. Will you read the question again?

Q. Suppose I just ask it again. It is obvious from Page 28 of Mr. Peterson's exhibit that his average pay thickness for the sweet gas area in the West Panhandle Field is greater than that of the average of the entire Panhandle Field, both East and West, is that correct?

A. As shown on here, that is true. However, he is not including the same area to which I have referred, but only the best portion, I will say, of the Class 1 classification which I used.

Q. You do not know that of your own knowledge, do you?

A. I have to assume, because I have not read this in detail.

Q. Now, he has listed the wells he used for the purpose of determining these pay thicknesses from Pages 1 to 26, inclusive, and I think you will find them listed in there by counties. Suppose you look at those wells and satisfy yourself on that point.

By the way, I think you will find a considerable number of Panhandle Eastern's wells listed there.

A. From hastily looking over this, I still believe that he selected the best gas producing area out of the West producing field for his consideration.

[fol. 4315]. Q. He used 307 wells in the West sweet gas area of the Panhandle Field, did he not?

A. Yes, sir, which is less than half of the wells in the West sweet area. The Railroad Commission Report of July 1940 states at that time there were 752 wells in the West sweet area.

Q. And which is over seven times more wells than you used?

A. That is right. However, I was only considering Panhandle Eastern acreage.

Q. And you would have used more, of course, if you had been able to get the data but you could not because the well logs were not adequate for that purpose?

A. That is true. I used the best information I had.

Q. Will you state what the average pay thickness would be in the sweet gas area of the West Panhandle Field by the use of Mr. Peterson's data?

A. If these pencil figures are correct, apparently the average thickness in the sweet gas area of the West Field is very close to 78 feet.

Q. Now, I might say, Mr. Smith, you are at liberty to check our figures on these at any time and make any corrections that you wish. A. Thank you.

Q. Now, if we exclude from consideration the acreage [fol. 4316] in west Gray County in which Panhandle Eastern possesses no acreage and we use Mr. Peterson's data as indicated on Page 28, what would be the average thickness of pay? A. Apparently, that would be 81.08.

Q. And the circumstance that causes Mr. Peterson's pay thickness to be reduced to 70 feet is simply because the balance of the gas field, to-wit, the East Panhandle

Field and the sour gas areas, are included in the total average and that brings the total down to 70 feet?

A: Apparently, from that exhibit, he has also considered the best commercial area in the East Field; in order to arrive at the 70 feet.

However, if he had considered the entire West sweet field and ~~no part of the East Field~~, he might also have arrived at a figure of 70 feet average pay thickness.

* * * * *

[fol. 4317] Trial Examiner: May I interject a question at this point? The depth of wells which you class as producing wells of the Panhandle Company is sufficiently uniform to indicate a very great uniformity of geologic formation in the area where the wells lie. Is that characteristic of this West Panhandle Field?

The Witness: Not necessarily. On the higher parts of the buried Granite Ridge, very often wells are limited to 2000 feet or less.

Mr. Culton: That is from the surface?

The Witness: From the surface. However, other wells [fol. 4318] which are on the flanks of the Granite Ridge go as deep as 3,600 feet or almost twice as deep as those which are drilled on top of the ridge. I think by reference to that cross-section map, you will understand more nearly—

Trial Examiner: (Interposing). I think I understand what you have in mind. Now, apart from your higher structures where your conditions are not typical, I assume, is the the formation rather uniform?

The Witness: On the higher parts of the Granite Ridge, the gas does not occur in the Granite Wash formation for the Granite Wash formations are accumulated along the flanks of the ridge, because the Granite Wash has originally come from the top of the ridge.

Consequently, you are limited to your Dolomitic and Limestone pay formations on top of the ridge, whereas, on the sides, you drill in the Granite Wash pay in the lower parts of the well which is very often extremely

prolific, having a much greater porosity than the Limestone and Dolomite.

Does that answer your question, sir?

Trial Examiner: In general. Apart from the wells near the higher sections, you usually have several formations that are producing, do you not, encountered in the individual wells?

The Witness: Yes, sir.

Trial Examiner: And how [may] producing strata are there as a rule, to make up your total of 70 feet?

[fol. 4319] The Witness: Sometimes as many as ten; usually 7.

Trial Examiner: Do you find a uniformity between the wells as to this fact?

The Witness: No. Very often pay sands will be encountered in one well; and in another well, one mile distant, these sands will be entirely absent.

Let me illustrate. One well may have 7 or 8 pay sands totaling maybe 80 feet of pay thickness, while, a mile away, you may have the same formations but without the porosity and, consequently, may get a section with 4 producing formations totaling maybe 50 feet.

That is what I meant when I made the statement that there were a great many variations in the field, even though the beds are similar in each of these two hypothetical wells.

The porosity did not extend from one to the other.

Trial Examiner: Thank you.

By Mr. Littman:

Q. Will you please refer to Schedule 1 of Exhibit 30.

Now, on this schedule, you have listed 34 wells for which you show the pay thickness in Column F and the initial natural open flow in Column G. Who made the determination of the pay thicknesses shown in Column F?

A. I assisted in making that tabulation with the pay thicknesses. However, the major part of the work was done by another man, Mr. Boyd.

[fol. 4320] Q. Was he your assistant?

A. He was assisting in this work, yes.

Q. And is he the same gentleman who assisted you in ascertaining the sand thicknesses of the 40-odd wells that you used for purposes of arriving at the 70 feet?

A. No, I would not say he had anything to do with the 70 feet. He did make some studies on this exhibit, and also he assisted Dr. Bartle in some of his exhibits.

Q. Who assisted you in the preparation of the work on the 40-odd well logs that you referred to in your testimony yesterday, of Panhandle Eastern?

A. Dr. Bartle assisted some.

Q. Well, in your opinion, are these pay thicknesses shown in Column F correct? A. Yes.

Q. As a matter of fact, I believe there are seven wells on this sheet that were included in the 40-odd wells upon which you relied in arriving at your 70 feet of pay thickness, is that correct? A. I believe so.

Q. Now, I call your attention to Line 3. A. Yes.

Q. Which refers to a well owned by Panhandle Eastern Pipe Line Company called the J. T. Sneed No. 1-6, which is located in Potter County.

[fol. 4321] A. Yes, sir, in Moore County.

Q. I am sorry, in Moore County.

Now, you find that that well has a pay thickness of 32 feet, do you not?

A. Yes, sir.

Q. And that was one of the wells upon which you relied in arriving at your pay thickness of 70 feet for the average of the 40 wells in the Panhandle Field owned by Panhandle Eastern? A. I believe it was.

Q. Now, I want you to refer to Exhibit 130 for identification, which is Mr. Peterson's Exhibit 219 in the Canadian River Case.

A. I noticed that when I was glancing through, there was a discrepancy between his thickness of pay and mine.

Q. Yes, I was trying to find it here.

A. Perhaps if he knew more about that well, he would agree with me.

Q. Well, of course, you think you are right, and probably Mr. Peterson thinks he is right. What pay thickness

did Mr. Peterson find on that well as disclosed in Exhibit 130 for identification? A. 75 feet.

Q. As compared with your pay thickness of what? [fol. 4322] A. 32 feet.

Q. It is more than 100 percent off, isn't it?

A. If he had had the experience with that well that I have had, he would certainly be closer to my estimate of pay thickness.

Q. Perhaps you and he will have an opportunity to thresh that out some day but, as you have stated yesterday, it is not an uncommon thing and, as a matter of fact, it is a very common thing for geologists to disagree on pay thickness? A. And not only geologists, to disagree.

Q. Who else disagrees? A. Lawyers, I think.

Q. We disagree on everything.

Trial Examiner: Some require more "pay" than others.

By Mr. Littman:

Q. On Line 27, you show a well belonging to Cities Service Company which is called the Burnett No. 21, located in Carson County. Will you please find that well on Mr. Peterson's exhibit? A. I have it.

Q. Now, what pay thickness did Mr. Peterson put on that well? A. 127 feet.

Q. And what pay thickness did you put on that well?

A. 65 feet.

[fol. 4323] I do not know what information Mr. Peterson had on the well. I only had the logs supplied me by Cities Service Company. He may have been able to examine the samples and may be more nearly right than I am.

I can only say that, apparently, the log which I had was a good one.

Q. How could you tell by looking at the samples anything about the pay thickness?

A. We went through that yesterday, Mr. Littman.

Q. You want to refer back to what you said about that yesterday? A. Yes, sir.

Q. To save time. All right. Let's get down into Mr. Culton's territory. Now, I notice in Line—

Mr. Culton: (Interposing) Just what do you mean by that?

Mr. Littman: Texoma Natural Gas Company.

Mr. Culton: Texoma is no more my territory than Panhandle Eastern or Phillips or Cities Service Company or any other client that I may have had sometime.

Mr. Littman: Don't take that too seriously, Mr. Culton.
By Mr. Littman:

Q. Line 29 on Schedule 1 shows a well owned by Texoma Natural Gas Company which is called the Burnett No. 1-S for which you show a pay thickness of 61 feet.

Now, what pay thickness did Mr. Peterson ascribe to that well, as shown by Exhibit No. 130? A. 128 feet.

[fol. 4324] Q. Well, let's look at the next line, which is Line No. 30.

A. Since that is one of Mr. Peterson's wells—pardon me.

Q. Which one is Mr. Peterson's own well?

A. This Burnett No. 1-S, I rather think he would have samples information which was considerably more than I had. I merely had a log which Mr. Peterson supplied me.

Q. Well, that is one of the difficulties that a geologist has, in determining pay thickness?

A. That is true. That is one of them.

Q. One of many of them?

A. That would be more nearly correct.

Q. Well, we will go now to Line 30, which is a well belonging to Texoma Natural Gas Company called the Burnett No. 2-T for which you have a pay thickness of 63 feet.

Will you please give us Mr. Peterson's estimate of pay thickness for that well? A. 150 feet.

Q. And Line No. 31, we have another well owned by Texoma Natural Gas Company called the Dauer Well. I believe Mr. Peterson refers to that as the Dauer No. 1-G, for which you have a pay thickness of 73 feet as shown in Column F of Schedule 1 of Exhibit 30.

[fol. 4325] A. And Mr. Peterson has 144 feet.

Another reason why Mr. Peterson's figures are likely to be more accurate than mine on a good many of his wells, is that he has stayed on the well during the entire time that the well was drilling through the pay section and, consequently, should be better able to estimate the pay thickness than I would be, since I was not there.

Mr. Culton: You are referring to the Texoma wells?

The Witness: The Texoma wells: but I was not estimating the reserve under any Texoma wells, merely the Panhandle Eastern acreage.

By Mr. Littman:

Q. Now, in Line 32 of Schedule 1, you show the Crutchfield No. 1-E well owned by Texoma Natural Gas Company, for which you found a pay thickness of 85 feet.

Will you please state what pay thickness was found for that well by Mr. Peterson? A. 144 feet.

Q. Now, the wells that you have read from Mr. Peterson's exhibit appear on Page 1, do they not, of Exhibit No. 130?

A. Four of them do. Some of the others are on subsequent pages.

Q. Now, do you find the A. D. Smith No. 1-E well on [fol. 4326] your exhibit? A. I do not.

Mr. Culton: You do not describe it at A. D. Smith—

The Witness: Perhaps you mean the Smith No. 1-E, Line 33.

By Mr. Littman:

Q. Perhaps you can tell me whether that is the same well as the one which Mr. Peterson has described on Page 2 of Exhibit No. 130 which is the fourth one from the bottom of that page.

A. Apparently, they are the same well.

Q. Now, you found a pay thickness of 61 feet for that well? A. And Mr. Peterson shows 123 feet.

Q. Did you identify another well on Mr. Peterson's exhibit that you have included in your list on Schedule 1?

A. Apparently, on Page 3, the M. J. McLaughlin No. 4-M corresponds to a well on Schedule 1, Exhibit 30, Line

34, wherein Mr. Peterson shows 76 feet pay thickness, and I show 41 feet pay thickness.

Q. Now, that is the last well shown in your Schedule 1, isn't it? A. Yes, sir.

Q. We have already discussed the A. D. Smith 1-E, have we not? A. We have.

[fol. 4327] Q. Do you find the R. S. Coon, 1-M well in your Schedule 1 of Exhibit 302. A. Line 7.

Q. Now, that well is owned by the Texoma Natural Gas Company, is it not? A. Yes.

Q. Now, what pay thickness did you find?

A. 28 feet.

Q. And what pay thickness did Mr. Peterson find for that well? A. 17 feet. We are getting closer together.

Q. Yes, well, that one was not very thick. Do you find the R. S. Coon well, No. 2-M on Schedule 1 of Exhibit 30? A. In Line 6.

Q. And what is your pay thickness for that well?

A. 18 feet.

Q. What is Mr. Peterson's thickness for that well?

A. 50 feet.

Q. Now, referring to Line 4, the R. S. Coon well No. 11-M, what pay thickness did you find for that well?

A. 32 feet.

Q. What pay thickness did Mr. Peterson find?

A. 55 feet.

Q. You have a well called the J. W. Moore, et al, 1-P?

[fol. 4328] A. Yes, at Line 19.

Q. And that is Line 19 of Schedule 1 of Exhibit 30?

A. Correct.

Q. And what pay thickness do you have for that well?

A. 74 feet.

Q. And what pay thickness did Mr. Peterson find?

A. 175 feet.

Q. Do you find the T. Thompson well No. 1-P in your schedule 1? A. At Line 20.

Q. And what is your pay thickness? A. 58 feet.

Q. What is Mr. Peterson's pay thickness?

A. 123 feet.

Q. Do you find the J. T. Sneed No. 13-E well in your Schedule 1 of Exhibit 30? A. At Line 16.

Q. What is your pay thickness? A. 46 feet.

Q. And what is Mr. Peterson's pay thickness?

A. 66 feet.

Q. Do you find the J. T. Sneed well No. 10-P in your Schedule 1? A. Line 18.

Q. And what is your pay thickness as shown in that schedule? A. 40 feet.

[fol. 4329] Q. What is Mr. Peterson's pay thickness?

A. 95 feet. The same applies to all of those Texoma wells, where undoubtedly Mr. Peterson had more information than I did and possibly his figures are much more accurate.

However, these pay thicknesses were not used in arriving at my average, and I was not considering reserves under Texoma acreage, only that under Panhandle Eastern acreage.

Q. Well, one of these wells was used that we have been talking about the past few minutes?

A. That is true.

Q. Namely, the J. T. Sneed No. 1-6 appearing in Line 3, is that correct? A. That is true.

Q. For which you found a pay thickness of 32 feet and Mr. Peterson found a pay thickness of 75 feet?

A. That is true, but I do not think Mr. Peterson knows as much about that well as I do.

Q. Well, and we, of course, do not have your list of 40 wells but perhaps you can tell us whether or not Mr. Peterson has included a good many of your 40-odd wells in his list of 130. We do not know, frankly.

A. I do not, either.

[fol. 4330] Q. Well, when we secure your list and your pay thicknesses, then, of course, the differences, if any, will appear, is that correct? A. That is true.

Q. But this does illustrate, does it not, Mr. Smith, the wide variations in findings of pay thicknesses as between competent geologists, is that correct?

A. I would say so.

Q. In other words, what we have been talking about is not an unusual thing. It is the usual thing, is it not, this wide discrepancy and variance in ascertaining pay thickness?

A. It is common, yes, for everyone to have differences of opinion.

Q. Now, under the porosity method, an accurate determination of pay thickness is, of course, essential to an accurate estimate of gas reserves, is it not?

A. That is true, to be able to tell definitely how much gas is there. However, in estimates, the word "estimate" of course is self-explanatory, that it is not accurate but only someone's idea as to what probably is or was or might be.

Q. Well, of course, one of the difficulties of the porosity method and its application is the difficulty of ascertaining the precise pay thicknesses throughout the area involved, is that not correct?

A. That is true, and I think that all other methods [fol. 4331] used in estimating reserves also have their difficulties and inaccuracies, as well as this one.

I would not have selected this one had I not thought I could obtain the most accurate estimate of the reserves under Panhandle Eastern's acreage.

Q. But there are other methods of ascertaining reserves which are not beset with the difficulty which we have been talking about for the last hour, namely, the difficulty of ascertaining the accurate pay thicknesses?

Mr. Culton: You mean reserves under a particular tract of land?

Mr. Littman: Yes.

The Witness: Not that difficulty, but some other difficulties which I consider much greater.

By Mr. Littman:

Q. All of which indicates, of course, there are still further differences of opinions among geologists?

A. Yea, verily.

Q. Now, one of the methods that does not require the ascertainment of pay thickness is the rock pressure decline method, is that correct? A. That is true.

Q. When the rock pressure decline method is used, you do not have to determine any such thing as porosity either, do you?

[fol. 4332] A. Only equalized pressure present, which is a bigger problem than I would want to tackle in the time that I made this study.

Q. You have already indicated that you have some quarrel with the rock pressure decline method, but I did want to make it clear upon this record that the rock pressure decline method does not comprehend any application whatever of any calculation of (1) pay thickness or (2) porosity. Is that correct?

A. That is true. I do not throw the rock pressure decline method out entirely. In some fields, I think that is the best method to use, but not in the Texas Panhandle Field.

Q. Dr. Bartle used it, didn't he? A. That is true.

Q. In other words, you are not attacking the rock pressure decline method as a general method?

A. That is right.

Q. But you are saying that it is not a good method to use in the Panhandle Field of Texas?

A. That is absolutely correct.

Q. Now, I believe you stated yesterday that you used a so-called 90 percent recovery factor which, in effect, results in a 10 percent lower estimate of gas reserves than you would have otherwise found, is that right?

A. That is true.

[fol. 4333] Q. Now, one of the reasons which you give in your testimony for using a 90 percent recovery factor is, "the varying differences in depth of pay under varying differences in porosity and permeability." Is that correct? A. I do not believe I said "depth of pay."

Q. I stated this was one of the reasons that you gave. Will you turn to Page 19 of Exhibit 30 and I think we will soon be able to tell whether I copied the testimony correctly or incorrectly in my notes.

A. You are right, I did say "depth of pay."

Q. That appears in the 9th and 10th lines from the bottom of Page 19 of Exhibit 30, does it not?

A. Yes, I have it.

Q. Now, how do those factors affect the ultimate recovery, Mr. Smith?

A. Well, one way of explaining that would be to take the two hypothetical wells which I was talking to the Trial Examiner about earlier, wherein I explained that the various pay formations were not continuous throughout the field, and I think it is safe to deduct from that

that there may be pay formations between wells which never will be tapped.

The fact that porosity and permeability are not continuous would not permit all the gas to be withdrawn. The depth of pay, I do not remember just exactly what I did have reference to there, unless it might be that the deeper pays would be more vulnerable to the encroaching [fol. 4334] water and the water would consequently keep some of the gas from being recovered.

The fact that the wells are drilled on an irregular pattern would tend to create differences of pressure between wells and would have an effect of keeping some of the gas from reaching a well bore.

Q. You mentioned those factors a little further down on the page. I was inquiring particularly with respect to "the varying differences in depth of pay and the varying differences in porosity and permeability", as distinguished from the other factors which you named, and I was trying to ascertain how those factors which I just quoted from your testimony could possibly affect the ultimate recovery.

A. I believe I have answered that question.

Q. Well, as to the varying differences in depth of pay, you used a 70-foot average, did you not?

A. That is true. That is thickness of pay, however, not depth of pay.

Q. What is the distinction, as you use it?

A. The thickness of pay is made up of the aggregate thickness at which gas is found in the production section. I mean by that, there may be one pay thickness of 5 feet, another of 20 feet, and all those added together would make the average of 70 feet thickness of pay.

[fol. 4335] The depth of pay would be the depth beneath the surface of the ground, which might be 2,000 feet, might be 1,500 feet, or might be 3,500 feet.

Q. How would that affect the recovery?

A. As I said, the deeper pays would be closer to the water encroachment. As it got down near sea level, there would be more likelihood of some of the gas being prevented from reaching the well bore by water encroachment.

Q. And your contours show that Panhandle Eastern's acreage is located near the top of the structure, is that not correct?

A. I mentioned also the fact at the same time I made that statement; that water had been noticed to be coming from the northeast part of the field and was fingering in, so to speak, toward the Panhandle Eastern acreage.

Trial Examiner: The record shows the use of acid as one of the artificial means, so to speak, of increasing the production of a properly drilled well.

Are there others?

The Witness: Not in use at the present time. Shooting has been used but is not used currently.

Trial Examiner: That is what I had in mind. I did not know.

[fol. 4336] Mr. Culton: Will you tell the Examiner why? What happened to the shooting?

The Witness: Shooting has been found to increase the difficulties with which gas is produced. It fractures the formation at the point where the shot is discharged and permits particles of shale and lime and granite wash to be produced with the gas and greatly increases the producing problems, for one reason.

Another reason, very often a cavy formation or cavy condition results from shooting the wells, and that has to be combatted during the entire life of the well.

Trial Examiner: That would be particularly damaging because of the fact that you used so much open hole?

The Witness: Yes, sir.

Trial Examiner: There is no way of knowing, of course, when you use acid just how effective that acid is going to be? In other words, in some wells you encounter a much larger predominance of limestone formation than you would in others, and I assume that a good deal of the acid treatment is more less wasted?

The Witness: You can determine prior to acidization, to a certain extent, what the effect of the acid will be, by examination of what samples you have.

Trial Examiner: Your cuttings?

The Witness: And testing the solubility in acid of those [fol. 4337] cuttings.

Trial Examiner: Is the acid treatment all applied after the completion of the well, or is it applied in steps as the drilling proceeds?

The Witness: Some companies use an acid treatment immediately before drilling in the granite wash, which is probably a very good method. That is, they drill down to approximately the top of the Granite Wash pay zone and acidize the well, then drill into the Granite Wash after the well has been acidized.

The step method which you are probably referring to is the one wherein we use, say, 1,000 gallons of acid first, then later another step would be a 2,000-gallon treatment, and [possible] a third would be a 6 or 7,000-gallon acid treatment, wherein we progressively reach back away from the well bore to increase the size of the bore and thus permit a greater number of pores or greater permeability to be in contact with the well bore.

Trial Examiner: Of course, there is no way of determining the effective zone of the acid reaction?

The Witness: No, sir, that can only be estimated.

Trial Examiner: Either it works or it does not work, and your measure of success is in the production increase?

The Witness: Yes, sir. I do not believe the acid will cause wells to produce any more, but it will probably cause [fol. 4338] them to produce faster.

It may, of course, if it reaches into, and eats out a nonporous zone or nonpermeable zone and permits a permeable zone to be in contact with the well bore by increasing the diameter of the well bore, the production would be increased.

Trial Examiner: A faster and greater production would be synonymous in case there was an offset well nearby?

The Witness. That is true.

By Mr. Littman:

Q. Well, Mr. Smith, we were discussing the 90 percent recovery factor and you had explained how, in your opinion, the depth of pay would affect the amount of recovery.

Now, as to porosity and permeability, how would those factors affect the recovery, bearing in mind that you use an average porosity of 20 percent, to be conservative?

A. That average porosity of 20 percent does not mean that it is uniformly 20 percent throughout the field, by any manner of means.

That average porosity of 20 percent may vary, the two extremes from 5 percent up to 100 percent.

Q. You mean it varies up and down? A. Yes, sir.

[fol. 4339] Q. But the average is 20 percent, isn't it?

A. Yes, sir.

Q. According to your—

A. (Interposing) That is the figure I used.

Q. Why did you assume here—withdraw that—why do you then knock off another 10 percent of your entire estimate which was arrived at by the average?

A. On the face of it, since it varies that much in the well bores, it stands to reason that it will also vary outside the well bores similarly, and if it does vary similarly away from the well bores, then there will be places away from the well bores which will have so little porosity and permeability that the gas contained there away from the well bore will never reach the well bore.

Q. I understood when you used a figure of 20 percent porosity, that that 20 percent took into account the variations up and down.

A. It does.

Q. Why do you always assume conditions below rather than above the average?

A. You mean, that it would be just as safe for me to assume that all these pay formations were connected or continuous throughout the field.

I think the evidence points the other direction, since in one well, you get 10 pay formations, and in another well, [fol. 4340] you get 5 or 3.

Q. But the average of those formations with respect to porosity is, according to your testimony, a conservative 20 percent, is it not?

A. Yes.

Q. Why knock off something from that merely because, in some instances, porosity is greater and in some instances it is less than 20 percent.

I simply cannot understand why, and I am asking you to explain why.

A. Because that porosity is not continuous and the permeability is not continuous.

Q. But the 20 percent is the average, is it?

A. 20 percent is the average which I assumed, yes.

Q. Isn't it a fact you took off 10 percent for the purpose of being conservative, to use your language of yesterday?

A. No, sir, not necessarily.

Q. It was one of the reasons, is it?

A. That is one of the reasons, and the other is that I cited, with the encroachment of the water, which would prevent all of the gas from being recovered which is evidenced by the fact that there is great variation in the exhibit which has been offered, compiled by Mr. Peterson.

The fact of the great variation in thickness of pays [fol. 4341] which range there, I believe, from 18 feet up to 175 feet, would indicate the great variations throughout the field. It would certainly stand that they are not continuous if, in one well, you have 18 feet and, in another well, you have 175 or almost 10 times as much.

Q. Well, I understood that your average of pay thickness took into the account the ups and downs, and that the average was struck having those ups and downs in mind.

Now, is my understanding correct?

A. No, but this is a different matter. This is an entirely different matter from an estimation of the amount of gas under the various pieces of acreage.

Q. Now, you have offered some sand thickness graphs which have been designated as Exhibits 28 and 29.

A. Yes, sir, and with those graphs, I intended to show graphically the great variations throughout the field.

Q. In what?

A. Porosity, permeability, thickness of pay, potential of the wells.

Q. All of which indicates the difficulties encountered in determining the porosity and sand thickness?

A. Correct.

Q. To what use did you put these graphs, in computing the estimate of gas reserves of Panhandle Eastern that appear in Exhibit 30?

[fol. 4342] A. To substantiate the 10 percent recovery factor.

Q. For any other purpose, other than to show the variations—

A. (Interposing) Throughout the field.

Q. That is described?

A. To show the general character of the field.

Q. Have you ever made an estimate of the amount of gas which Panhandle Eastern could expect to produce from its wells in 1940?

A. No, not in any one year.

Q. But you have made an estimate with respect to productivity? A. As shown in Exhibit 30.

Q. Well, that is in toto, is it not? A. Yes.

Q. But you have not made any estimate of the amount of gas which Panhandle Eastern could expect to produce from its wells for any given year, have you?

A. No, sir.

Q. Who selected these 34 wells which are reflected in your sand graphs?

A. Mr. Boyd, Dr. Bartle and myself.

Q. Why were these particular wells selected?

A. They most nearly indicated the point which we wanted to bring out.

[fol. 4343] Q. That is, the point of the variations?

A. Yes, sir.

Q. In pay thickness and porosity and permeability?

A. Yes.

Q. Why didn't you use 34 of Panhandle Eastern's own wells for this purpose?

A. No particular reason.

Q. Are these wells representative of the situation that prevails in Panhandle Eastern's acreage?

A. Probably so.

Q. How many of these wells that you show in sand graphs, Exhibits 28 and 29, are Panhandle Eastern's wells?

A. Six of them are owned by Panhandle Eastern Pipe Line Company, and one other is connected to Panhandle Eastern Pipe Line Company.

Q. That makes 7 out of the 34? A. Yes.

Q. Please refer to Schedule 5 of Exhibit 30.

A. Yes, sir.

Q. Do the columns headed, "Open flow potential—M.c.f." refer to initial open flow or to the open flow as of each of the years 1935 to 1940?

A. The open flow of each of the years.

Q. You do, however, show the initial flow down at the bottom of the page, do you not? A. Yes, sir.

[fol. 4344] Q. Did you use the data on this schedule to compute your estimate of remaining gas?

A. This schedule was made up principally to show that the wells connected to Panhandle Eastern Pipe Line Company are above the average of the remainder of the field in open flow capacity.

Q. For example, for the year 1940, this schedule shows that Panhandle Eastern's wells have a 50 percent larger open flow potential than the average wells in the Panhandle Field, is that correct?

A. That is correct, approximately 50 percent.

Q. Have you at any time made an estimate of remaining gas content of Panhandle Eastern's acreage based upon the existing rock pressures rather than upon the original rock pressures?

A. I have studied that and attempted to make an estimate of that, from time to time.

Q. You never concluded your studies in that regard?

A. That is true.

Q. Can you state what initial quantity of gas you found per acre upon the method that you utilized, the present rock pressure rather than the estimated—

A. No, I cannot.

Q. You do not recall any figures you can give us at [fol. 4345] this time with respect to the estimate that you made?

A. No, I cannot.

Q. Now, just one or two more questions, and these relate to the rock pressure maps for the years 1938, 1939, 1940 and 1941 which have been designated for identification as Exhibits 24, 25, 26 and 27.

Is my understanding correct, that you prepared that part of these maps with respect to the Hugoton Field as well as that for the Panhandle Field?

A. I worked with Dr. Bartle on that part of the map.

Q. Was it a joint enterprise or—

A. (Interposing). I would say yes, it was a joint enterprise.

Q. Now, what isobaric intervals are shown on those maps? A. Ten-pound intervals.

Q. For the Hugoton Field?

A. For the Hugoton Field.

Q. And from what source was the information obtained for the purpose of establishing the rock pressure bands for the Hugoton Field?

A. From well tests that are taken annually on those wells.

Q. On which wells?

A. The wells in the Hugoton Field, all wells in the [fol. 4346] Hugoton Field.

Q. That is, this rock pressure map was constructed from data derived from not only Panhandle Eastern's own wells but from the wells of others in the field?

A. All other wells in the field.

Q. Why didn't you use 50-pound isobars in the case of the Hugoton Field as you did in the case of the Panhandle Field?

A. Because 50-pound isobars would not have shown as clearly the existing conditions in the Hugoton Field as the 10-pound isobars do, and if 10-pound isobars had been used in the Texas field, in order to make the two comparable, it would have been a maze of lines and probably not comprehensible.

Q. You mean, the map would be too small to be utilized for purposes of showing 10-pound isobaric intervals?

A. The scale of the map would have been too small, yes.

Q. Well, there isn't any doubt in your mind, is there, that that part of the map which shows the 10-pound isobaric intervals is much more accurate than the part of

the map which shows the Panhandle Field by 50-pound intervals?

A. That is true. Another reason why we used the 50-pound was because those maps were already available as published by the Texas Railroad Commission, and we did not have sufficient time to work up a 10-pound isobar [fol. 4347] map on the Texas Field from any records that we had or could obtain.

Q. I take it you consider it would have been desirable to do so? A. Certainly.

Q. Now, you stated that in making the map for the Hugoton Field for the years 1938 to 1941, as shown in Exhibits for identification 24 to 27, inclusive, and respectively, you utilized the rock pressure readings from all of the wells?

A. That is true.

Q. Will you please state the source of the information?

A. I believe in all cases the reports as published by the Kansas Corporation Commission were used.

Q. Now, Dr. Bartle made direct use of the Hugoton Field rock pressure maps 24 to 27, inclusive? A. Yes.

Q. In arriving at his estimate of reserves?

A. That influenced it. I believe, after a study was made of those maps and figures obtained from data on the maps, and the Kansas Corporation Commission Reports, that also another method was used in arriving at the per-acre reserve of the Hugoton Field, namely, the thickness of pay, porosity method.

Q. Well, the fact is, however, that as to the lower part of these maps, which shows the Panhandle Field and the [fol. 4348] 50-pound isobaric intervals for rock pressures for the various years, you did not use those, strictly speaking, in calculating your reserves, did you?

A. No.

Q. Mr. Smith, you have also made an estimate of—withdraw that—in Schedule 7 of your Exhibit 30, you show the Hugoton production to Argus Natural Gas Company, by Panhandle Eastern Pipe Line Company, do you not?

A. Yes, sir.

Q. You, however, did ~~not~~ make an estimate of the reserves that are subject to the Argus Natural Gas Company contracts, did you?

A. No, neither Dr. Bartle or myself.

Q. Those were excluded from consideration?

A. Yes, sir.

GLENN G. BARTLE, a witness, having been previously sworn, resumed the stand and testified further as follows:

Cross-Examination.

By Mr. Littman:

Q. Dr. Bartle, you prepared Exhibit No. 36, did you not? A. Yes, sir.

Q. Will you please turn to Page 2? A. All right.

Q. Of your written testimony. I note there are two page 2's. A. Yes.

Q. I am referring to the second one.

A. Yes, sir.

Q. On that page, you made the following statement:

"I have indicated the probable boundaries on all sides of the rock pressure and open flow maps hereafter discussed by a broken line."

Which maps do you refer to by that statement, Dr. Bartle?

[fol. 4353] A. The rock pressure maps are the ones that were introduced in evidence by Mr. Smith because he was referring to the south part of it.

Now, that same map reaches on up into the north part of the Hugoton area. Those are the exhibits beginning with No. 24, the ones we have been referring to.

Q. I believe they are Exhibits 24, 25, 26 and 27 for identification? A. That is right.

Q. Being rock pressure maps for the years 1938 to 1941?

Mr. Culton: And also 1932, wasn't there?

Mr. Littman: 1938, 1939, 1940 and 1941.

The Witness: The 1932 map would be Exhibit No. 23. The 1938 map is No. 24. Anyone of those maps shows the boundary line as we now think it to be, not as we thought it to be at any specific date in the past.

By Mr. Littman:

Q. In other words, the line to which you refer in the testimony which I have read is the line which represents your present judgment?

A. That is right.

Q. Suppose we look at the latest of those maps?

A. All right, the 1941 rock pressure map.

Q. That would be Exhibit 27.

[fol. 4354] A. You notice that this is a dotted line. We do not attempt to say the exact ultimate limits of this field, and we are not making an estimate of the whole field for that reason.

I will be glad to go around the field with you, showing you the dry holes and the wells near the edge, if you care to have me do so, indicating the basis for this dotted line as of the present time.

Q. Before you do that, Dr. Bartle, it may be well for you to do just that later, but we have not stated, as yet, in the record, that we are now discussing the Hugoton Field.

We want the record to show that, do we not?

A. Yes, sir.

Q. If I correctly understand your testimony, this dotted line is your best judgment as to the present boundary of the Hugoton Field, is that right?

Mr. Culton: You mean present judgment as to the boundary?

The Witness: Yes.

By Mr. Littman:

Q. Present judgment as to the boundary?

A. That is right.

Q. Would it be the present boundary, in so far as it is shown on your 1941 map, would it not?

A. That is right. We did not think there was any reason [fol. 4355] for going back into our 1932 conception or our 1938 conception, since that was only of historic interest.

Q. When you used the term "probable boundaries on all sides", in your testimony on Page 2, you are referring to that dotted line shown in this map which is Exhibit 27?

A. That is right.

Q. Now, on Page 2, you make the following statement, "the total area within the broken line is approximately 2,540,000 acres," is that correct?

A. That is correct, that is a statement of information.

Q. Have you ever made an estimate of the total original recoverable reserves for this area?

A. For this whole area?

Q. Yes, for the area embraced by this dotted line and which you state embraces 2,540,000 acres.

A. No, I have not. I have not classified this acreage separately into various classifications. It is possible that further development will bring about such a classification.

So far as the Panhandle Eastern's acreage which I evaluated in this exhibit—

Q. (Interposing) Exhibit 36?

A. Exhibit 36, I assumed that the acreage which they have located was of the same order, that is, we did not give more than one estimate. We used this estimate of 9,500,000 at the sand face.

[fol. 4356] Q. 9,500,000 cubic feet?

A. Cubic feet per acre at the sand face as applying to all of the Panhandle Eastern acreage.

Q. Pardon me, may I interrupt right there?

The 9,500,000 cubic feet figure to which you have just referred is your estimate of the original amount of gas?

A. Of the original amount of gas at the sand face. That is not the amount recoverable.

Q. Pardon the interruption, I thought it would be better to clear that up as we went along.

A. Yes.

Now, as to the amount of production which could be expected at the edges of this field, I do not believe it is yet possible to make a classification of acreage that would be at all accurate but, for the Panhandle Eastern acreage scattered to some extent across this field, we are still using the same figure.

Q. Namely, the 9,500,000 cubic foot?

A. The 9,500,000 cubic feet.

Q. To be exact, that figure is 9,541,000 cubic feet; is it not?

A. That is right.

The wells at the edge of the field, in many cases, have had a smaller open flow. As to how many of the spots [fol. 4357] scattered away from this withdrawn area will turn out to be good, that would still be impossible to tell.

Undoubtedly, there will be some good spots and some poor spots scattered over the field as a whole.

Q. What, in your judgment, would be the proper original gas content per acre figure to use for the entire area in the Hugoton Field of 2,540,000 acres embraced by the dotted line?

A. I have no basis for any other figure than the one of 9,500,000 which I believe to be the true figure for the withdrawn area.

As I have tried to say, I think that in the other regions which are not now withdrawn and in which we have less information, there will undoubtedly be some good spots and some poor spots.

I have no basis, though, for any other estimate than that.

Q. When you used the term "withdrawn area", will you indicate on the map, Exhibit No. 27, what you refer to?

A. The area chiefly which is colored some other color than the light yellow, buff. That is the area which has suffered a decline of pressure to 430 or below.

That makes up on the latest map here a total of about half a million acres—I will give it to you exactly—467,640 acres which is less than one-fifth of the total area within [fol. 4358] the dotted line.

Q. So that there is a considerable area within the dotted line boundary of the Hugoton Field for which you state you cannot now make an estimate of original gas content?

A. Except on the assumption that the behavior of that will be comparable to this withdrawn area.

Q. And what is your best judgment with respect to that? Is it your best judgment at this time that the areas outside of your areas of withdrawal will yield approximately the same original gas content as that which you have assigned to the areas within your areas of withdrawal?

A. As I said to you, I have no basis for any other estimate than the 9,500,000. I think that there will be good spots develop, as good as this, and perhaps even better.

I feel quite sure that there will be large areas of this 2,500,000 which will be less.

Q. But on the average, what would you say?

A. On the average, I would think it would be about the same.

Q. That is the same, namely—

A. (Interposing) 9,500,000 per acre.

Q. 9,500,000 cubic feet per acre?

A. At the sand face.

Q. At the sand face? A. Yes.

[fol. 4359] Q. And the area that we have been talking about, as you have just stated, which is outside of the areas of withdrawal and yet within the total boundary—

A. (Interposing) Within the dotted line—

Q. (Continuing) —represent approximately four-fifths of the entire area within the boundary?

A. That is right.

Q. Now, does all of Panhandle Eastern's acreage, and by that I mean acreage not only owned by Panhandle Eastern but subject to its gas purchase contracts fall within these so-called areas of withdrawals which you have described?

A. I believe not. The operated acreage does, but the unoperated acreage, of course, does not.

Q. Would you mind giving us one or two examples of that situation?

A. It will be necessary to refer to the exhibit that Mr. Smith introduced in evidence of Panhandle Eastern acreage holdings, the number of which I do not remember.

Q. I will be very glad to hand you my copy of Exhibit 30, Dr. Bartle.

(Whereupon, a document was handed the witness.)

The Witness: The map that he introduced—

Mr. Culton: (Interposing) The ownership map.

The Witness: The ownership map.

Mr. Littman: Do you know the exhibit number of that, Mr. Culton?

[fol. 4360] The Witness: A comparison of that map and any one of these pressure maps would give the information I desire.

Mr. Culton: No. 20.

Mr. Littman: Exhibit No. 20.

The Witness: You want me to give some acreage that Panhandle Eastern owns which is not within the withdrawn area?

By Mr. Littman:

Q. Yes, generally, Dr. Barfle, don't spend much time on it.

A. All right. For instance, this area in western Seward County, northwest of Liberal in Township 32-34 and 33-34.

Q. That is a considerable amount of acreage.

A. That is a considerable block of acreage which is not in an area which has been withdrawn, at least, not enough to give us any accurate data as to the value of that acreage.

However, in my estimate, I considered that to be of the value of 9,500,000 at the sand face even though I had little data to support that estimate.

Q. And I see some other acreage outside of the areas of withdrawals.

A. The area in Texas County, Oklahoma, both north and south of the village of Optima in Oklahoma, Townships 4-16 and 3-16, that makes a block of acreage which is [fol. 4361] not drilled and from which there has been no gas withdrawn.

Q. And that is a considerable block of acreage also, is it not?

A. That is a considerable block, yes.

Q. Without going into any further detail at this time, there are some other considerable blocks of acreage that fall outside of the areas of withdrawal?

A. That is right. Probably the place which I am farthest out on the limb is Hansford County, Texas, in which we own acreage and which is far from production.

Q. That sticks out kind of like a sore thumb at the bottom of the map. That is away from your areas of withdrawal, is that right?

A. That is right.

Q. I hope you will pardon my homely analogy.

A. We will all have a lot of homely analogies, perhaps.

Q. And, notwithstanding the fact that those acres are outside of your areas of withdrawals, you did, nonetheless, accord to them the original recovery of 9,500,000 cubic feet?

A. No, the full original amount of gas at the sand face.

Q. I am sorry. A. Of 9,500,000.

[fol. 4362] Q. Of original gas content?

A. Yes, and the reason I did that was because I had no other information which would apply more specifically.

Q. Now, Dr. Bartle, you suggested a moment ago that you were going to tell us how and why you drew the dotted boundary line. You are perfectly at liberty to go right ahead and tell us about it.

Mr. Culton: I wonder if you could explain that better if it were on the board?

The Witness: Perhaps.

By Mr. Littman:

Q. Pardon me, Dr. Bartle, before you proceed with your explanation, is my understanding correct that when you used the term "at the sand face", that that term is synonymous with "original gas content"?

A. Original gas content, yes.

Q. But at the pressure which would be expected to be found at the sand face? A. That is right.

Q. What pressure would that be, approximately?

A. Absolute. That is an absolute pressure, I believe, of 476. I have it in my figures, if you want it.

[fol. 4365] GLENN G. BARTLE, a witness, having been previously sworn, resumed the stand and testified further as follows:

Cross-Examination (Continued):

By Mr. Littman:

Q. Dr. Bartle, at the close of the morning session, you were about to explain the method used in drawing the dashed line indicating the general boundary of the Hugoton Field on Exhibit No. 27.

A. Yes.

Q. Would you proceed now with your explanation?

A. I might call attention to the fact that this Hugoton Field, as we are using the term, is not the original Hugoton Field around Hugoton but the extension of the same into this very considerable area, everything outside of the Texas Panhandle Field which Mr. Smith has discussed.

This is a very considerable area then, reaching from a [fol. 4366] point west of Garden City and east of Lakin, Kansas, to southern Sherman and Hansford counties, Texas.

The information we have on the edge wells or on the wells near the boundary would be important, then, in knowing how large the whole field is. That does not mean that there could not be dry holes drilled within the area which we have dashed and colored.

All that means is that there have been no wells that were absolutely dry drilled as yet.

Some of these edge wells are as follows:

In Texas County, Oklahoma, the Three Way Oil Company drilled a well known as Johnson No. 1 in Section 11-1-18. That well is near Hardesty. At this point, the well—

Mr. Culton: (Interposing) Is that marked with a circle?

The Witness: Marked with a circle on the exhibit.

The well showed a small amount of gas estimated at 2 million at 2,560 and 2,620. It was drilled to a total depth of 4,600 feet, but it seemed to be so small that we have dropped that outside of the boundary of the field.

Another well in the same general region was Allison & Sturdevant No. 1, Gailey, Section 30-2-18, immediately east of the village of Hardesty. The open flow of that well, natural, was only 300,000 cubic feet per day at a depth of 2,698 to 2,750. After a shot, however, that showed about 2 million open flow and I have put that inside of the produce [fol. 4367] tive area.

In the same region, the Underwood-Jolliffe No. 1 Well, in Section 28-3-19, indicated on the map, was reported

entirely dry at the depth of 2,717 and I put that outside the boundary of the field.

Trial Examiner: By the way, Dr. Bartle, the field boundary which you have sketched on this map is your own conception of the boundary of profitable production?

The Witness: That is right.

There might be a question about profitability in many of these cases, but, there is a considerable amount of gas, enough to justify being included in the Hugoton Field is my conception.

Near Texhoma in the same county, the Home Development Company drilled Allison No. 11 in Section 4-1-12.

Mr. Culton: That is on the west side?

The Witness: That is on the west side of the field, a point immediately north of the village of Texhoma.

This well was reported to have 10 million-cubic feet per day at a depth between 2,670 and 2,850. It continued drilling to a total depth of 3,040.

Another well in the same section, the Washoma Petroleum, Allison No. 1, had gas estimated to be between 5 and 10 million feet per day at 2,710 and was drilled to a total depth of 4,071.

[fol. 4368]. However, these wells were never connected and the report was incomplete. There are no samples available, nothing that would indicate the accuracy of that report.

Furthermore, we have observed a tendency for the well drillers, particularly in a remote area, men who are used to getting large wells in the Texas Panhandle Field, to roughly estimate a larger amount of gas than later indications would justify.

It is possible that this should be included within the boundary of the field. I did not think so. If we did include that, that would extend the boundary a little bit farther west in Texas County, Oklahoma.

In the vicinity of Hooker in the same county, the Peerless Oil Company drilled Elmore No. 1 in Section 28-5-18.

about four miles east of Hooker. The original open flow was 2,500,000.

After acidizing, it showed 12,464,000 with a good gas record at 2,646 and between 2,701 and 2,738. I have, therefore, put it inside the boundary of the field.

In the same area, the World Petroleum, Deardorf No. 1, Section 2-4-19, indicated on the map, was completely dry, although it drilled to a depth of 3,432, seeming to be outside of the Hugoton Field. I have, therefore, drawn the line between this small producing well and this dry hole.

Near Goodwell in the same county, Hagy-Harrington & [fol. 4369] Marsh drilled Becker No. 1 in Section 4-1-13 reported about 8 million cubic feet of gas, and I have included that in the field.

Only two miles west, Hagy-Harrington & Marsh drilled Peek No. 1 in Section 6-1-13, which reported 2,750,000 feet of gas between 2,834 and 2,885. That is the only information I have that seems to apply in Texas County, Oklahoma, except of some interest, perhaps, a recently drilled dry hole in Beaver County, T. K. Loffland, No. 1 Fee in Section 13-6-21 at the extreme edge of my map.

Mr. Culton: Extreme right edge?

The Witness: Extreme right edge of my map, a point about 15 miles southeast of Liberal, Kansas. This well was completed about the middle of September for a dry hole.

In Texas, the situation is much the same. In Hansford County, the Texas Mineral Investments, Norton No. 1, drilled in Section 123 of Block 2, G. H. & H. was a dry hole or a well with only $\frac{1}{2}$ million, 500,000 cubic feet of gas from 3,005 to 3,055. Such a small showing did not seem to justify inclusion in the Hugoton Field.

In the same county, Curley Hobbs, No. 1 Pearson-Hitch, Section 290, Block 2, G. H. & H., indicated on the map, reported gas at 2,680 to 2,685 and again at 2,730 to 2,825, a total of 5,100,000 cubic feet open flow. It is not clear from that log whether that was after shooting or before, but, in any event, I have included that within the Hugoton Field [fol. 4370] on the basis of that 5 million well.

The Caldwell No. 1 Adriance, in Section 21, Block 3, G. H. & H., in the extreme southern part of Hansford County, reported only a gas show at 2,952 and at 3,070. Therefore, it has been left outside of the Hugoton Field in a region presumed to be dry even though it is immediately north of a portion of the Texas Panhandle Field, making an indentation or embayment of the dotted line farther west than might be logically expected.

The Oklavania No. 1 Coofs, Section 13, Block 45, H. & T. C., is a dry hole drilled to 4,585 in the same county. That is immediately east of the production that we have been discussing.

The Oklavania No. 1 Whitson in Section 2, Block 4T, T. & N. O., southeast of the former dry hole, was also dry at 3,510.

The I. T. I. O. No. 1 O'Laughlin, Section 2, Block 2, W. C. R. R., northeast of the former dry hole, was dry at 3,249.

It will be noticed that these depths are sufficient to penetrate the formations which would be expected to bear gas if there is a comparison between the Hugoton Field at Hugoton or the Texas Panhandle Field toward the south.

In Sherman County, Texas, the Phillips Petroleum, L. M. Price No. 1, drilled in Section 33, Block B-2, G. H. & H., indicated on the map, showed only 1,000,000 of gas at 2,105 [fol. 4371] and 1,500,000 of gas at 3,140. Although drilled to a total depth of 4,004, a very small well, yet it seems to belong inside the gas production area on the basis of that showing.

Hagy, Harrington & Marsh, Freeman No. 1, in Section 46, Block 2, G. H. & H., that is in the northeastern Sherman County near the Hansford County line, showed 15,445,000 cubic feet of gas open flow at 2,776 to 2,933. Not on a detailed log, obviously.

Possibly this well was acidized in order to obtain that much open flow, although the log record is not clear on that point; but I have included that within the area of the gas field.

Gibson Oil Company, Bivins No. 1, in Section 35, Block B-3, G. H. & H., indicated on the map, showed gas at 2,980, and 3,030, at 3,050, estimated to between 10 and 15 million cubic feet; was drilled to a total depth of 3,660 and is included in the area inside of the gas field.

Marland No. 1 Flores in Section 64, Block 3-T, T. & N. O., in the extreme southern part of Sherman County, had a small showing of gas, amount not estimated by the drillers, at 3,045. It was drilled to a total depth of 4,003 and I have drawn the line near that well but have left that immediate area outside of production.

I. T. I. O., Bryant, in Section 369, Block 1 T, T. & N. O., indicated on the map, is the farthest west well, was reported to have 33 million cubic feet of gas at 2,600 to 2,900; again not a detailed log, a little difficult to tell a great deal about it; but, with that large report of gas, not only at 2,600 to 2,900, but at 2,900 to 3,050 and an oil showing at 3,980, led me to put that inside of the gas field, which might conceivably be a separate gas field, as far as I can tell.

That well went to a total depth of 5,138 where it encountered granite and was probably acidized to get this large amount of gas.

I. T. I. O., Davis, in Section 404 in the same area, Block 1-T, T. & N. O., showed 34,900,000 at 2,700 to 3,282, drilled to a total depth of 3,850 and is inside the gas field.

Phillips Petroleum, O. I. Jones No. 1, in Section 161, Block 1-C, G. H. & H., in Sherman County, indicated on the map, northeast of Stratford, showed gas apparently in very small amount at 2,925 but was completed as a dry hole at 3,850 and is, therefore, outside of the boundary line.

Coming on up into Kansas in Morton County, Kansas, Watson No. 1 in Section 27-34-40, near Rolla, south of Rolla, also inside the field, with a total gas showing of 5,917,000 picked up in many places in the hole at 2,508, 2,560, 2,585, 2,670.

Although there is no production log on it, I included that in the gas field and that is a well that has been drawn from.

[fol. 4373] Burton No. 1 in Section 11-33-40, indicated on the map, is also a producing well although it only showed 1,572,000 and 20 feet of pay sand and there was water encountered in that hole at a depth rather high in the formation.

Chambers No. 1 in Section 25-33-40, Morton County, indicated on the map, showed 1,500,000 at 2,575, with a showing of gas at 2,460. It is, therefore, put inside of the gas field.

P. E. Simmons No. 1, Section 16-32-39, one of the Panhandle Eastern's wells, indicated on the map, showed 2,900,000 at the time it was drilled, but it had already dropped to an open flow of 1,398,000.

It was acidized later to 11,312,000. It is a small well, a difficult well to operate, apparently only has about 17 feet of pay and is near the edge of the field.

Completely outside of the field in Morton County, Hydraulic Oil Company, Butts, in Section 22-34-43, northwest of Elkhart, Kansas, showed only a showing of gas at 2,296, 2,435, 2,508 and 2,960, apparently very little porosity.

The estimate for all of those showings for that well was three-fourths of a million cubic feet of gas. It was drilled to a total depth of 3,450, which, considering that it is high on the structure, makes it one of the deeper wells of the field, but was, for all practical purposes, a dry hole and seems to condemn the idea of extending this gas field toward the west.

[fol. 4374] This Hydraulic Oil Company, Butts, is also shown on my geologic cross-section and has been studied very carefully by all of us who are interested in this field.

On up into Stanton County, very few wells have been drilled, but there is one.

Western Production Company, No. 1 Plummer, in Section 11-29-41, near the village of Johnson in Stanton County, Kansas, was completely dry as far as we can tell at a total depth of 3,005.

In Grant County, Colorado Utilities, Sullivan No. 1, in Section 12-29-38, indicated on the map southwest of Ulysses, reported 4 million cubic feet of gas but the State test in 1938 only showed 560,000.

In spite of that, I have included that as a part of the Hugoton Field. It was drilled to a total depth of 2,715.

In Hamilton County, Kansas, W. J. Sherry, Porter No. 1, Section 30-25-41, indicated on the map southwest of Syracuse in the region which is called by geologists the Syracuse anticline, was completely dry to a depth of 6,453.

There was a dry hole which was drilled on a structure mapped by the U. S. G. S., the United States Geological Survey, which apparently did not extend the Hugoton Field even into that favorable area.

By Mr. Littman:

Q. May I interrupt there to inquire, Dr. Bartle, the distance of the well that you last mentioned from the [fol. 4375] western boundary of your outline?

A. About 14 miles. Each of these (indicating) is a mile.

Q. I thought you were referring to the well up above, were you not?

A. I am sorry, yes, this well is 26 miles.

Q. What is the name of that well, now?

A. W. J. Sherry, Porter No. 1.

It happens that in the immediate vicinity of Syracuse and Lakin, there is a folio of the United States Geological Survey which was prepared many years ago, indicating the general geology of that region.

Q. How did you happen to draw that dashed line at a point approximately 26 miles east of that well that you just named?

A. On the basis of these other wells in Kearny County and in Grant County, obviously, that is much out of the area and it is only stratigraphic information that we can get from that.

However, I have no well 5 or 2 or 3 miles from the edge of the boundary, and I brought this in because it was located on a favorable geological structure and very deep but still unsuccessful. I brought it in for what it was worth.

In Kearny County, Tri-State-Campbell No. 2, Section [fol. 4376] 7-25-35, indicated on the map immediately southeast of Lakin, had 3,260,000 open flow at 2,462, 2,573, 2,670.

This 3,000,000 well was acidized to a total open flow of 9,500,000 and is, therefore, inside the area of the Hugoton Field.

In Finney County, Lone Star, Hamlin No. 1, in Section 31-24-34, indicated on the map, came in for 2,700,000, was acidized to 13,000,000 and is, therefore, inside the area.

In the same county, Kansas Pipe, Spratt No. 1, in Section 31-24-33, although it only came in for 800,000 in three different places at 2,533, 2,570, 2,680, was acidized to a total open flow of 4,600,000 and is, therefore, put inside the area.

In Haskell County,—I am almost through with this resume,—Kuhn-Neilson No. 1, in Section 21-28-32, indicated on the map north of the village of Sublette, came in for 1,750,000 at 2,716 and is put inside the area, although it is a very small well.

In the same county, Helmerick Payne, Trimpa No. 1, in Section 28-28-33, indicated on the map, made 3,000,000 open flow at 2,694, 2,715, 2,765, 2,882. Completed to a total depth of 2,978 and it is put inside of the gas field.

In the same county, Kuhn-Meridith No. 1, in Section 10-30-33, immediately northeast of the village of Satanta, made 100,000 only, 100,000 cubic feet open flow per day at 2,548, 2,650, 2,685, was drilled to a total depth of 2,782. [fol. 4377] In spite of that extremely small well, only a showing in any gas field, I put that inside of the gas area, gas producing area.

In Seward County, Vickers, Hitch No. 1 in Section 33-32-34, north of Liberal, came in for about 3,000,000, the exact amount not known because it was only estimated.

Other drillers at the same time estimated it to be dry entirely. The last gauge on that well showed 750,000, so evidently those who estimated it to be completely dry were wrong; but, at the same time, it is a small well.

The production was between 2,552 and 2,590, and between 2,640 and 2,715. It was carried to a total depth of 4,037 and is inside the gas field.

It is also one of the wells from which we have considerable subsurface information as shown on the geologic cross-section.

T. W. Slick Well, Pyle No. 1, in Section 14-33-33, in Seward County, indicated on the map, showed gas at 2,650, but there was no other showing although it was drilled to a total depth of 5,032.

It is, therefore, marked outside the field and the line is drawn between this well and the one immediately west, which had a small amount of production.

The Seward County Oil, Sealy No. 1, in Section 20-33-33, indicated on the map, is the one to which I just referred, [fol. 4378] and showed 1,000,000 open flow at 2,654 and 2,689, 2,749; was drilled to a total depth of 2,764 and is inside the area.

I have gone around the field with you for the purpose of indicating the basis for such a dotted line and we have not closed off the possibilities of other wells being found outside the area.

On the other hand, we have included within the gas field a great number of wells and a considerable amount of acreage which seems to be rather small.

Mr. Lee: Dr. Bartle, may I ask a question?

The Witness: Yes.

Mr. Lee: Did you indicate only one Panhandle well in all that area?

Mr. Culton: He is just going around the edge.

The Witness: That is right. I was going around the edge of the field; and it happened that only one applied, which belonged to the Panhandle Eastern Pipe Line Company.

By Mr. Littman:

Q. There has not been sufficient drilling in and about this Hugoton Field, Dr. Bartle, so that one can say that it can be defined with any degree of definiteness?

A. It is defined with a degree of definiteness which I indicated by going around. Of course, that is the reason we have the whole thing as a dashed line rather than as an absolute field-limit line.

[fol. 4379] You can see why I hesitate to ascribe the same amount of gas to all portions of the field.

Eventually, we will be able to classify this acreage, and we will be able to tell more accurately where are the good places in it and where they are not, because I have included inside the field wells which are little more than showings.

Q. When you used the term "good wells and poor wells", are you referring to the open flow?

A. Yes, as an indication of the productivity of the well.

Q. Now, while open flow readings would indicate the productivity, they would not necessarily indicate the volume of gas in the surrounding acreage, would it?

A. They certainly would indicate the volume of gas in the surrounding acreage. They would not establish it absolutely, but just the same as an oil well comes in for a large potential, it is presumably a better investment than one that comes in for a very small potential, so a well that has a large open flow can reasonably be expected to produce more than a well that has only a showing of gas. That is the error in our thinking, if you will pardon me, in disregarding the amount of open flow and depending entirely on pressure, because a little well is not as big as a big well.

Unfortunately, we do not have a perfect method of measuring that. We have to measure that by open flow, but that is the closest thing we have to a true potential of the productivity capacity.

Q. But you cannot make an estimate of gas reserves by a consideration of the open flow and nothing else?

A. There is a very good way of estimating reserves by the decline of open flow. It happens that it does not apply to this field because of acidizing of the wells, but there is such a thing as estimating gas entirely by the decline of open flow.

There is something to be said in behalf of that.

Q. You did not use that method in making your estimates of the reserves of the Hugoton Field?

A. Because recent acidizing changes the open flow conditions, but certainly the decline of open flow is something to be considered and certainly the capacity of the well is to be considered very much and it is absurd to say that a half-a-million cubic foot well is as good an investment

and that you can make as much return from it as from a 25 million foot well.

That is the kind of an absurdity that we fell into this morning, in my opinion.

Q. Is there a direct relationship between open flow and gas in place?

A. I do not know. Certainly there is some relation- [fol. 4381-] ship, whether it is direct or not, it could not be established.

Q. How do you determine it or, let me put this question, how would you determine it?

A. How would I determine the gas in place? I determined it in my calculations here on the basis of porosity and the amount of gas under pressure and the amount of acreage available and that is the basis of my method.

That is the reason I chose that method. However, the open flow is certainly a factor, and I would not hesitate to use the decline of open flow method if it was not for the incidence of acidizing of these wells.

Q. You stated that there was some relationship between open flow and gas in place? A. Yes.

Q. Can that relationship be determined in advance?

A. Not absolutely, of course. Other things determine the amount of gas which can be extracted from a well. The open flow, of course, is a rough measure of permeability and that, of course, as we have indicated, is a matter of yielding and speed.

[fol. 4382]. The time element that we discussed comes in there, but the actual amount of gas, of course, has to be there before it can yield, and there is certainly a relationship between big wells and big production, small wells and no production.

When your open flow is gone, the well is gone. If you have only a half-a-million to start with, half-a-million open flow, it is going to decline and be gone in a short time, of course.

Q. But how can you determine the amount of gas in place by knowing the open flow potential and nothing else?

A. I think you need to know all these other factors. You need to know the gas pay thickness. You need to know the area of the field. You need to know the porosity, as far as we can determine it.

All these other factors, I think, ought to come into a general study of the problem, but certainly one of the things that is important is the size of the well; and that is what open flow means, the size of the well.

Q. It means the deliverability of the well?

A. No, open flow is not exactly the same as the deliverability. Open flow is the theoretical factor determined by the pitot tube method described by Mr. Smith yesterday.

That is the theoretical figure that that gas well should yield to the air in 24 hours.

[fol. 4383] Now, actually, as a matter of fact, we do not want to leave these wells open, yielding to the air for 24-hour periods, and we would only take a percentage in any event, but that is the only term that we have for—I cannot think of the term they use in the oil industry—for the capacity of the wells, that is really what it means, for the capacity of the wells.

Now, deliverability depends upon other conditions. It depends upon the line pressure and the size of the hole and all these other things that would let the well yield from its open flow.

That is, their percentage. Open flow is not identical with deliverability. Mr. Hinton will be discussing deliverability at a later date.

My only objection to your thought is the assumption that a small well is as good an investment and will yield as much as a large well.

I do not know how much a small well will yield, but I am sure it will be less than a large well.

Q. Well, the only thing I wanted to make clear was that you cannot make an estimate of the reserves in place by measuring the open flow of a well.

A. Not until after it has had a history.

Q. That is right.

Now, at the bottom of Page 3 of your written testimony [fol. 4384] in Exhibit 36, you refer to the Northern Natural Gas Company and Panhandle Eastern Pipe Line Company providing the two chief markets since 1932.

A. Yes.

Q. For the gas produced in the Hugoton Field, do you not? A. That is right.

Q. Will you state the portion of gas withdrawn by each of these two companies from the Hugoton Field during the past few years in relation to the total annual withdrawals?

A. I can get that from the company records. I do not believe I have it in any of my exhibits.

Mr. Smith's paper has it, I believe. That is a matter of company statistics, which I am willing to discuss, although the company men probably could give it with less difficulty. I have Mr. Smith's testimony.

Mr. Cullon: I do not know whether you understood his question or not. He asked you for the takes by Northern Natural and Panhandle Eastern as compared with all of the takes in the field. Is that what you are looking for?

The Witness: It is a very substantial amount of total takes of the field. I can give you the exact figures by thumbing through the company's records, if you want them.

By Mr. Liftman:

Q. Perhaps you could give us that after the next recess: [fol. 4385] A. It is a large amount. I believe I am correct in my statement that these two companies take most of the gas from that field.

Q. I would like to have it separately as to each company for the takes.

A. Yes, I will check up on that.

Q. Is it your opinion, Dr. Bartle, that the ultimate boundary of the Hugoton Field will probably extend beyond the dashed line which you have shown on Exhibit 27?

A. It is my opinion that there will be gas discovered in the area beyond the dashed line. It is also my opinion that there will be some dry holes drilled within the area of the dashed line.

Of course, the magnificent thing about this thing is that, up to date, there has been no absolutely dry well. That cannot continue indefinitely, of course, in this extremely large area.

Q. But you do expect that eventually the boundary—

A. (Interposing) Will be changed.

Q. (Continuing)—will be extended?

A. Extended and constricted. That is the reason I dashed the line instead of making it solid.

Q. Do you think the total area will remain about the same in acres?

[fol. 4386] A. I do not know. I would be glad if I did.

Q. What do you think the probabilities are that it will eventually be a larger area than the 2,000,000, I think you said 2,540,000 acres?

A. I have no basis for an opinion that it will be either larger or smaller. That is an extremely large area already. I hope it will extend on over into western Kansas and Nebraska, but I doubt it.

Trial Examiner: I wonder, Dr. Bartle, if you studied the logs of explorations east and west of the present Hugoton Field?

The Witness: I have to some extent, sir.

Trial Examiner: Give us some idea of the extent of those explorations in each direction and your knowledge of them.

The Witness: They have not been extensive. They have not been intensive, of course. There have been a few scattered wells drilled in the vicinity of Dodge City, northeast of the Hugoton Field.

Trial Examiner: What are the distances that you have in mind now?

The Witness: Twenty, 25 miles away. There was a recent test for oil in Kearny County, northwest of this area, which is producing a small amount of oil at the present time.

Trial Examiner: Was there any gas in that well?

The Witness: Not that I know of. There is oil, though, [fol. 4387] from the formations deeper than the Hugoton Field.

Of course, the normal prospecting for oil in Kansas or for gas in Kansas, as a matter of fact, would probably not be from these Permian formations we are discussing, but from deeper Mississippian or Ordovician formations, and most of the wildcat wells would be looking for oil, of course, because it is more valuable.

Trial Examiner: Are the drilling methods such as would take them through it—

The Witness: (Interposing) Yes, they would.

Trial Examiner: (Continuing)—the formations that you have at Hugoton without discovery of gas?

The Witness: No, it has come to be the common custom of coring of the formations and I think that most wildcat holes in western Kansas would end up with some knowledge of the formations which produce gas in the Hugoton Field.

Up to date, none of them have opened up new gas fields at that horizon or any other, although there is that new oil.

Trial Examiner: What extent have those explorations reached in the west?

The Witness: There is, I believe, if I can indicate on the map, this new oil in Kearny County which would be, I believe it is in Townships 22, either 21 or 22, whereas the north line here is Township 24 and there has been one or two wells drilled there.

[fol. 4388] That is, in northwestern Kearny County, they had a showing of oil and now one that is just finally being called a well. Of course, there is the Shallow Water oil field in northern Finney County. It may be in Scott, but it is near the boundary line and that, of course, that is Mississippian oil production, three or four wells there.

Up to date, of course, those wells have not had a pipe line outlet and so the small amount of oil that they have had has been marketed only by trucking.

Trial Examiner: Do you consider the remainder of Stanton and Morton counties west of the field as eliminated?

The Witness: Perhaps not absolutely eliminated, but certainly it is very discouraging.

Trial Examiner: You do not look for gas discoveries in those areas?

The Witness: No. Immediately north in Finney County and in eastern Kearny County, of course, we could extend the field on, perhaps.

Mr. Culton: Dr. Bartle, is there any formation condition there on the west of the point that the Examiner is asking you about?

The Witness: Yes.

Mr. Culton: That would make you have that discouraging situation?

The Witness: My cross-section goes across the field to [fol. 4389] the Butts well that we mentioned in Morton County, and I have indicated on that cross-section that the porosity condition is less favorable.

This whole thing is a stratigraphic trap, of course, and if you do not have a dolomite or limestone that is porous enough to hold gas, why, the gas will not be there.

It seems to be accumulated on this monoclinal dip in the porous area, rather than due to any geologic fold or structural trap.

Trial Examiner: Your testimony indicates you would expect an extension to the north.

The Witness: A possibility to the north, yes, sir.

Trial Examiner: Rather than to the east or to the west.

The Witness: Yes, sir.

Trial Examiner: And I believe someone has stated that the geologists do not expect the Hugoton and Panhandle fields to connect, I mean by way of production.

The Witness: That is entirely a matter of definition. These dry holes in Mansford County which I pointed out would indicate that if there is a connection, it has to be around about a semicircle toward the west.

Trial Examiner: You would not say then, that the area between the two fields is wholly eliminated or wholly explored?

The Witness: That is the reason we indicated this area [fol. 4390] in Sherman and northern Hansford County as part of the field, and that is why, I believe, Panhandle Eastern has certain acreage in that region.

By Mr. Littman:

Q. Your estimate of the remaining gas content of Panhandle Eastern's leases in the Hugoton Field and of the leases under gas purchase contract in that field, exclusive of the reserves on which Argus Natural Gas Company has first call, is shown in Schedule 3 of your Exhibit 36, is it not?

A. I believe so.

Q. Do the reserves shown at the foot of each of the Columns D, F, H and J on Page 2, and Columns D, F, H and J on Page 3, represent recoverable reserves at the assumed abandonment pressure shown at the top of those columns?

A. At an abandonment pressure shown at the top of the column and a recovery factor of 90 percent, that is right.

Q. And you have shown the estimate of reserves upon eight different abandonment pressures, have you not?

A. Yes, sir.

Q. Ranging from 150 pounds down to zero pounds abandonment pressure?

A. At the well head, yes, sir.

Q. Why do you submit these eight estimates on these various abandonment pressures rather than one estimate?

A. I do not know when the wells will be abandoned and [fol. 4391] so, for your convenience, I estimated it at eight different abandonment pressures.

Q. Do you have any opinion as to the pressure at which it is expected the wells in the Hugoton Field will be abandoned?

A. No, I have no opinion as a geologist on that point. I think that depends upon the conditions of operation, the economic factors involved, rather than the geologic factors.

[fol. 4392] By Mr. Littman:

Q. Dr. Bartle, referring again to Schedule 3 of Exhibit 36 in Column D, you show the original amount of gas for the various classes of acreage, do you not?

A. Yes, the classification there is not on the basis of productivity as Mr. Smith's classification was in Texas, but on the basis of ownership.

Q. That is, you had one class of acreage with respect to the original amount of gas?

A. That is right. This is a matter of company ownership and drilled and undrilled. The classification then is an arbitrary thing depending on the progress of the company at any one time.

Q. And you used as your original amount of gas per acre the figure of 9541 m. c. f. per acre, is that correct?

A. That is correct, at sand face.

Q. Before going into your method of arriving at 9,541 m. c. f. per acre, I would like to ask why you haven't included in your estimate the reserves which are subject to the Argus Natural Gas Company's contract?

A. I show that in a separate table which is in the same exhibit, Schedule 4, page 2. That also is a matter of convenience on the basis of company ownership and dedication.

Mr. Culton: And the estimated remaining reserves are shown on page 3?

[fol. 4393] The Witness: That same schedule, pages 3 and 4, is the remaining gas content in the Hugoton field under dedication to the Argus.

By Mr. Littman:

Q. I would like to have you explain step by step how you arrive at the estimate of 9,541,000 cubic feet per acre of original amount of gas.

A. I used the porosity pressure method, porosity method which has been referred to. I estimated the average gas pay in this field as 40.4 feet. I estimated the porosity as 18.6 per cent. I calculated the initial absolute bottom-hole pressure as 478, and took as the pressure we wanted 16.4, so my equation is 40.4 times 18.6 times 43,560, which is the number of square feet in an acre, times 478, divided by 16.4, which makes a total amount of gas at sand [base] of 9,541

m.c.f. That is gas pay times porosity, times the number of square feet in the acre, times the absolute pressure divided by the surface pressure, which gives the result in gas per acre at sand face.

Q. Will you please explain how you arrived at an average pay thickness of 40.4 feet?

A. In 1939, in the preparation of an article which I wrote with Mr. Smith, company geologist, which article was published in the American Association of Petroleum Geologists bulletin of that year, I made a study of the logs [fol. 4394] of all of the wells for which there was any reasonably accurate log available. There were 183 at the time in the Hugoton field, scattered over the Hugoton field.

.

Q. Can you state how many wells there were?

A. At that time, yes, there were 285 wells at that time.

Q. And 183 of that number whose logs were intelligible?

A. That is right, with respect to the gas pay, in my opinion. At that time I got an average gas pay of 40.4 feet. Since that time I have examined logs of other more recently drilled wells and made an effort to see if that is about the proper gas pay thickness. New wells seemed to substantiate that and so I used the same figure which I had in 1939. This, then, is on a basis of an average of 183 wells in 1939, verified by an examination of thirty or forty more wells since that time.

Q. How many of Panhandle Eastern wells, both owned and controlled, are included in those 183, approximately?

A. Most of them; we wouldn't know exactly because we took all the wells in the field that had a log that was in [fol. 4395] telligible. Panhandle Eastern wells in the main are well drilled. It is possible that some of them in the early days of the drilling didn't have complete information. I didn't select them because they were Panhandle Eastern wells or leave them out because they were not; I was trying to get the situation in the field as a whole.

Q. I gather from your testimony that 40.4 feet of average pay thickness is the average for the entire Hugoton field, is it not?

A. That is my opinion.

Q. And doesn't necessarily represent the average of Panhandle Eastern acreage?

A. I believe it does represent the average of Panhandle Eastern acreage, since Panhandle Eastern wells are scattered all over the field and represent a substantial number of this total of 183, so I believe that is a fairly accurate figure; not absolutely accurate, of course, but fairly accurate figure for the field as a whole, or Panhandle Eastern wells.

Q. Would you say that Panhandle Eastern acreage is located in better portions of the Hugoton field or merely the average portions?

A. When there were wells drilling in the Hugoton field and there was a lot of territory in the whole field undrilled, it is to be expected that every producer would cluster [fol. 4396] around the larger wells.

After those wells were drilled pipe lines were laid into those good areas, so that the development of any gas field, including this one, is not regularly scattered over the whole field, but in the region where good wells were drilled at an early date, and where pipe lines were laid, so that these people have a connection for their wells.

Now, with that in mind we will get what we call our sweet spots developed early, and in order to continue the same degree of productivity it will be necessary for other sweet spots to develop.

Now, as far as Panhandle Eastern's own wells and gas purchase wells are concerned, they are not scattered equally throughout the whole field, but, I believe, are as advantageously located as the average in the field, and that the average in the field is clustered around what I have described as sweet spots.

Trial Examiner: The real picture, Dr. Bartle is, am I right, the acreage within this entire field as you have defined it on this map marked for identification, Exhibit 27, I believe, is pretty thoroughly consolidated at the present time?

The Witness: That is right.

Trial Examiner: And the developments have, naturally, as you say, extended out from the best early wells?

[fol. 4397] The Witness: That is right.

Trial Examiner: And is now subject to further extension as market demands develop for more oil?

The Witness: That is right.

Trial Examiner: And while the field is now well known in this area near Hugoton there have been no developments around, for instance, Guymon, which would entitle you now to chart that area in great detail, as you are able to do in the Hugoton area?

The Witness: It happens, Mr. Examiner, that your illustration is not exactly accurate. In fact, ~~there were early wells at Guymon; if you had taken any other place on the map what you say would have been entirely correct, but~~ there has been a little unusually good information in that region.

Trial Examiner: Well, your holdings indicate that you believe in the Guymon area, as you have indicated on the map there.

The Witness: That is right. Other places in the gas field will be developed as the market needs require and as large wells are developed in any certain area.

Trial Examiner: You say "needs," you mean the development of further markets?

The Witness: Yes.

By Mr. Littman:

[fol. 4398] Q. Dr. Bartle, I don't believe you have answered my specific question—

A. And that question was—

Q. (Continuing)—as to whether, in your opinion, the acreage owned and controlled by Panhandle Eastern Pipe Line is located in better than average portions of the Hugoton field, that is, as you have outlined it in Exhibit 27.

A. I don't believe that we have any right to say that it is better than the average in the withdrawn area.

Now, we have already admitted we do not know how much will be produced from the area which is outside of the withdrawn area, making up three-quarters of the field,

so that I think that our average for the other wells in comparison, for instance, with the Northern Natural wells, I think would be about the same.

Q. Now, how did you determine the average porosity of 18.6 per cent which you used in arriving at your estimate of gas reserves?

A. An average porosity figure is, of course, a judgment figure. I was influenced in making my judgment of the average porosity by a study of the gas producing formation, by a microscopic study of samples; by a comparison of the strata found in various portions of the field, and by the behaviour of the wells, as indicated in the series of maps showing the pressure decline; by a comparison of the porosity of other fields, and as careful an analysis of [fol. 4399] the field as a whole as I was able to make.

The figure 18.6 per cent happens to be the same figure which I used in 1939 in the publication previously cited. I wouldn't hesitate to change that figure, however, if I found evidence indicating that the porosity was either larger or smaller.

Q. The figure of 18.6 per cent suggests, Dr. Bartle, that it is a calculated figure, and I am wondering whether you didn't have a certain calculation to arrive at that figure.

A. In the 1939 publication it was a calculated figure; I would have no hesitation, however, in changing that percentage if I saw any grounds for so changing it. I believe that the behaviour of the wells is one way of knowing something more about the field than simply the porosity.

Q. Will you please state the method whereby you calculated the figure of 18.6 per cent in the first instance?

A. By use of the pressure decline method and the estimate of the thickness of the pay. It seems to me that the behaviour of the wells were such as to justify that estimate of 18.6 per cent porosity, in relating this to the behaviour of wells. However, that is not the only indication that I get for the percentage 18.6.

Q. Well, Dr. Bartle, I believe you said that you calculated this figure of 18.6. I take it by that you mean that you [fol. 4400] had certain figures and made certain calculations and arrived at a precise amount of 18.6 per cent. Now,

what I want you to state for the record is how you arrived at this 18.6; give us the calculation.

A. In the 1939 paper, or in this series of maps which I have submitted of the same type, which is much better evidence—

Q. You arrived at 18.6 per cent for the first time when?

A. In 1939.

Q. Will you give us the calculation you used in arriving at this 18.6 per cent?

Mr. Culton: You are now looking at the same document, a copy of which Mr. Littman has before him.

A. "Relative Porosity and Permeability of producing formation of Hugoton Field, Kansas, as indicated by gas withdrawals and pressure decline."

Mr. Culton: Yes, the same document that Mr. Littman has a copy of?

The Witness: I think so. In 1939 we believed that that Hugoton field of Kansas only showed a withdrawal area of 379,200 acres; a withdrawal of gas of 161,300,368 m. c. f.; a withdrawal per acre of 425 m. c. f.; an initial rock pressure of 435 pounds per square inch; an averaged weight rock pressure in the withdrawn area of 416.33 pounds per [fol. 4401] square inch; a withdrawn per pound decline of 8,959,029 m. c. f., which would make a calculated initial reserve of 3,897,177,615 m. c. f., which reduced to acreage would make a calculated initial reserve per acre as of that time of 10,277 m. c. f., or 10 million cubic feet per acre.

This would indicate an amount of gas which reduced in volume by pressure would occupy a space seven and a half feet in thickness, and since production is believed to be from a formation 40.4 feet in thickness, it would [indicated] a porosity of approximately 18.6 per cent in order to establish that much space.

Q. In other words, Doctor, as I understand your testimony, you arrived at this figure of 18.6 per cent of porosity by the use of the rock pressure decline method?

A. Yes; I said that in the first place, we used that originally in 1939; as a matter of fact, the name of the article is, "Relative Porosity and permeability of produc-

ing formation of Hugoton Field, Kansas, as indicated by gas withdrawals and pressure decline."

Now, in order to establish the true porosity, other factors should be considered. I have enumerated those, certainly including the factor of the reasonableness with respect to other gas fields withdrawals as they have been taken from abandoned gas fields; all of those other factors.

Q. Do you consider those factors to represent reliable [fol. 4402] criteria upon which to make a determination of porosity?

A. Why, yes. The whole problem of establishing of this porosity is a matter of judgment. It might be a little different from 18.6; maybe that is misleading in assuming a pretense to accuracy; however, it is about right. The whole problem of establishing porosity is a severe one. We have had great-long discussions here the last few days about cores.

Now, obviously a core is only for a small area and particularly in a limestone or dolomite reservoir there could be great variation a short distance laterally from that core. As a matter of fact, there is even a great variation within a core itself, so that doesn't mean very much. The only way that we could tell what the porosity has been is after all the gas has been withdrawn from it. If then the limits of the field are known it is possible to go backward on the proposition and see what the effective porosity must have been. As a matter of fact, I have done that in cases of abandoned fields near Kansas City, and I expect to do that more so.

I hope eventually if we can get enough men reporting back about abandoned gas fields, that we can really establish this business of porosity to where a judgment figure is more accurate all the time. In the meantime we have to do the best we can.

[fol. 4403] Q. Isn't it a fact, Doctor, that along with the volume you must have pressure?

A. Of course.

Q. Now, Dr. Bartle, in the calculation which you have just given us you found from your data that the initial

reserve per acre in the Hugoton field was 10,277 m. c. f., is that correct?

A. That is right.

Q. And you, as a matter of fact, relied upon that figure?

A. Not particularly.

Q. Well, in the calculation for the purpose of arriving at your 18.6 per cent figure, is that correct?

A. Yes.

Q. Now you have used what amount of initial reserve per acre for the purpose of your present estimate?

A. Nine million five, instead of ten million two.

Q. Well, isn't the 10,277 m. c. f., an accurate figure to use for purposes of calculating the precise porosity figure which you are using in this proceeding?

A. I have never contended this was a precise figure and do not now contend. As a matter of fact, we are not going to worry a great deal about the difference between nine million five and ten million two; the difference is due to more careful calculation.

[Vol. 4404] Q. In the 1941 figures of the absolute pressure?

A. I plead guilty to a slight difference, and I believe I was a little off in the absolute pressure in 1939, and I believe I am a little more accurate now.

Q. But you didn't reflect any of that in arriving at your 18.6 per cent porosity, did you? It doesn't seem to affect your 18.6 porosity?

A. That is right. There is a little difference in the absolute pressure which makes that difference; it is a matter of no moment, in my opinion.

Q. Well, have you calculated how much more gas you would have secured by way of an estimate on the Hugoton field had you used the initial reserve of 10,277 m. c. f. per acre instead of 9,541?

A. I haven't made that calculation. This is a matter of order of magnitude, and I am perfectly willing to be convinced that 18.6 is not quite right. I am perfectly willing to plead guilty to changing these figures on the basis of the absolute pressure. I regard that of no particular importance considering the order of magnitude involved. If it would please you any better to take 19 per cent or 18½ per cent, I don't believe it would be quite as good, but we wouldn't worry much about it. 18.6 per cent is a little less

than 20 per cent, as Mr. Smith has discussed it in the Texas field.

[fol. 4405] It seemed as to the amount of gas which has been produced in certain other abandoned fields—I believe it to be about correct; an estimated figure.

Q. The thing I would like to have you straighten me out, Dr. Bartle, and which disturbs me is this: if the rock pressure decline method is good and sufficient for the purpose of arriving at a percentage of porosity, why isn't it good enough for the purposes of arriving at an estimate of reserves? Why use that method in the first instance?

A. If you are going to make a study of a field you want to get all the information you can about it; you want to know about the stratigraphy, the formations, how they are laid down; you want to know all you can, all about the thickness of the pay, which is not an accurate figure, but which you have to estimate as best you can.

Q. You don't have to know anything about the thickness of the pay if you make your estimate by the rock pressure decline method, do you?

A. You must.

Q. But you don't use it in the calculation of reserves under that method?

A. You use it very directly—and that was the error we fell into this morning—you use it directly in so far as the gas pay was the thing that makes the space in which the gas has to be held.

[fol. 4406] Q. But you don't estimate thickness in arriving at your estimate by the rock pressure decline method, do you?

A. If you are using it as a simple engineering method, disregarding entirely the voids, why that doesn't appear in your arithmetical average, but as a matter of fact, the greatest weakness of the rock pressure method is that you don't know the size of the gas reservoir and certainly the thickness of the gas pay is a matter of the greatest importance in establishing the size of the reservoir.

The greatest weakness of the rock pressure decline method is in estimating the size of the reservoir.

Q. You don't need to know the size of the reservoir to determine the volume of gas that is contained if you have

the proper initial pressure and the proper present pressure?

A. Oh, yes. If you don't know the size of the reservoir then you don't know how much you are getting per pound rock pressure decline.

Q. Assuming a tight container.

[fol. 4407] The Witness: If you had a tank buried underground that was completely empty or a tank completely filled with gas so that there is complete communication in that tank, nothing to stop it, you could estimate the size of the container in that case by withdrawal of the gas subject to certain corrections and modifications by following Boyle's law.

Now, the greatest weakness of the rock pressure decline method is the fact that you do not have such a tank, and the tank consists of all this scattered gas pay thickness of which we have been talking.

Q. Well, you don't have to know the size of the tank in your sort of case.

A. Yes, you calculate the size of the tank; that is the purpose of the method, otherwise the whole thing doesn't make any sense.

Q. Suppose you give me the factors that you have to [fol. 4408] know in order to make a determination of initial reserves by the rock pressure decline method, just as you have done in your article; and I note that you do not have in your article, in your calculation of how you arrive at this figure 10,277 m. c. f. of initial reserves per acre, any showing of the size of the container.

A. You have the volume of the gas; the calculated volume of the gas.

Q. That has been withdrawn?

A. No. The calculated volume of the gas there in the first place, and that certainly fits into a container. The container happens to be scattered through a lot of rock formation; that is what we mean by the volume; the calculated volume.

Q. Well, you enumerate the things you must have in order to determine reserves by the rock pressure decline

method. You have got to have, first, the initial rock pressure; is that correct?

A. Yes.

Q. That is what I am trying to get at. I want you to give me the figures you have to have.

A. You have to have the initial pressure, which should be the virgin pressure of the field.

Q. What else?

A. The amount of gas that has been withdrawn; the [fol. 4409] total measured and unmeasured gas withdrawn from the reservoir; you have to have the equilibrium pressure of the gas—

Q. That is the rock pressure reading?

A. In the equilibrium for that field. I would like to talk more about that. Shall I do that now?

Q. I wish you would continue with your list and elaborate later.

A. All right. From the amount of gas which has been withdrawn and the amount of loss of pressure you can divide and find out the loss of pressure per pound drop. Now, that gives you a method which is not exactly accurate of estimating the original calculated volume.

Q. Now, what is that method called?

A. Multiplication.

Q. Isn't it called rock pressure decline method?

A. Multiplication is what we are talking about now. You get the amount of gas withdrawn per pound, or per ten pounds—whatever you are using—and multiply that out and find the calculated initial volume of the gas. Now that certainly fits into a container; it comes from a container. If you want to figure how big that container was under the ground it is a matter of porosity. If it is not under the ground, if it is in the tank, it is a matter of cavity.

Q. But, Dr. Bartle, you had arrived at the amount of gas remaining before you even mentioned anything about [fol. 4410] the container, isn't that right?

A. The amount of gas remaining—

Q. Well, the original gas contained had been arrived at by you in this calculation without any reference to the volume or size of the container. You calculated the size of the container; that is what you are doing on all this process, calculating the size of the container.

A. Of course, that is subject to certain inaccuracies. Shall I take that up and talk about that now?

Q. Well, it is accurate enough for you to determine a porosity figure, is it not, as you did in 1939 in your article of 18.6?

A. It is accurate in so far as it reflects the history of the field; it is worth something in determining porosity.

Q. And it was good enough for you to stand by it?

A. Sure, I stand by it, now. That is the reason I made this much better series. I made a series of five maps as to the behaviour of the wells because I think that is a matter of importance in turning out the picture of this field.

Q. Nothing has happened since July 1, 1939, as of which date you calculated the initial reserve per acre of 10,277 feet to cause you to change your—

A. Percentage?

Q. Your porosity figure of 18.6 per cent, arrived at by the use of the rock pressure decline method; is that correct?

[fol. 4411] A. Of course, I have in evidence here much more detail on that point. We calculated the thing in 1932, 1938, 1939, 1940, and 1941. Those figures are in evidence.

Q. Yes, they were in your exhibit.

A. That is right.

Q. Let us take a look at that for a moment. You say that is on what page of Exhibit 36?

A. That is schedule 1, pages 1 and 2. They are calculations for the various years beginning in 1932, skipping to 1938, in order not to duplicate unnecessarily.

This is the story of the behaviour of the wells and I certainly believe that behaviour of the wells ought to be considered in such a study. However, I have to go back to the geologist's method of calculating a reserve after studying the behaviour of the wells.

Q. Now the figure of 9,541 cubic feet which you have adopted for the purpose of estimate—

A. Is not identical with any of these figures.

Q. It is lower than any of these figures, is it not? Isn't that a more accurate way to put it?

A. The 9,541 was used there, and this is 9,568. I believe that is 27 lower than the other one.

Q. It is not lower than the lowest of the years, but it is considerably lower than the most recent experience as indicated by years, and shown by the year 1941, is it not?

A. Nine million seven was in 1941, compared with nine million five. I wouldn't say a difference of less than two per cent is of considerable moment in a calculated figure. I think we are getting pretty close together. If it was 50 or 75 per cent difference it would be something to talk about, but I think as long as we are talking about something less than two per cent it is not very important; I think we are in pretty much agreement. I have no pretense that my figure of nine million five is within two per cent of accuracy, or that any other such figure is ever going to be within two per cent of accuracy.

The chief difficulty, of course, is getting an equilibrium pressure, and the weighted rock average is only one way of getting at that figure. I used that method because we don't have any better. As a matter of fact, a deviation from Boyle's law is more than three per cent, because natural gas is not a perfect gas.

Q. Does the temperature correction tend to compensate the difference?

A. From Boyle's law, yes. It doesn't exactly compensate, the main problem is getting the equilibrium pressure.

Q. Do you have any interest in the production down there in the Hugoton field?

A. I have some interest in gas wells when they are paid for.

[fol. 4413] Q. To whom do you sell gas?

A. To Panhandle Eastern.

LOUIS F. SPERRY, a witness, having been previously sworn, resumed the stand and testified further as follows:

[fol. 4561] Cross-Examination

By Mr. Littman:

Q. Mr. Sperry, you are the Treasurer of Panhandle Eastern Pipe Line Company, are you not? A. I am.

Q. How long have you occupied that position?

A. Just short of five years.

Q. What position, if any, did you occupy with Panhandle Eastern Pipe Line Company prior to that time?

A. None.

Q. Do you hold any other position besides that of Treasurer? A. No.

Q. You have prepared Exhibit 74 which summarizes your direct testimony, have you not?

A. I do not know to what you refer. You mean those four or five short summaries—

Q. (Interposing) Yes.

A. (Continuing)—that I put in supplemental to my original testimony?

Q. Yes.

Mr. Wheat: That is Exhibit 74, the four typewritten sheets of summary.

The Witness: I did not know it had been given a number, but that is true.

[fol. 4562] Trial Examiner: Thank you.

By Mr. Littman:

Q. And your testimony in this case has related, thus far, to the subject of working capital, has it not?

A. That is right.

Q. Will you please turn to Exhibit No. 74?

The Witness: I think I have a copy here, yes.

By Mr. Littman:

Q. Is my understanding correct that Table 3 of Exhibit 74 enumerates six items which make up your estimate of the total requirement for working capital for Panhandle Eastern Pipe Line Company and its affiliate, Illinois Natural Gas Company? A. That is correct.

Q. Now, the total estimate for working capital is \$1,569,000, is it not? A. That is correct.

Q. The first item listed on Table 3 is "Normal cash funds for operating expenses", in the amount of \$470,000, is that correct? A. Yes.

[fol. 4563] Q. How was this allowance determined, Mr. Sperry?

A. I took figures initially from the annual cash reports of the company which outline the amounts of cash actually expended by months by the corporation for all purposes.

I took from this schedule the total aggregate amounts by months for such expenditures of the total as are applicable to this case, and that gave me the total amounts expended by months for the period in question.

I then subtracted from such amounts any items which are not properly included in the working capital requirements, such as are included in a rate base, and I found that over a period of a year and a half prior to June 30, that we had paid out for purely operating expenses a total of \$5,609,600.

Q. You mean June 30—

A. (Interposing) 1941, which is the cut-off date on my testimony, which is approximately \$311,666 monthly.

I corrected that figure of \$311,000-odd monthly for an estimated 45-day period, which makes that amount approximately 467,000, which I then rounded out to \$470,000, the figure you mentioned.

Q. Now, you just spoke of "cash reports". Are you referring to the company's cash book?

A. No, I am referring to the annual cash forecast, which the company prepared every month for my purposes, which is transcribed from the cash books of the company. It is a summary of those books.

[fol. 4564] Q. You now use the term "forecast."

A. Yes.

Q. Does that represent the actual cash expenditures?

A. Yes, it represents actual cash expenditures for those months of the year which have elapsed and a forecast of our cash requirements for estimated expenditures for the balance of the year.

In other words, these cash forecast reports are prepared on a 12-months' annual basis, so many months actual, so many months estimated, to the end of the year.

I have used only those months which have elapsed and which show the actual amount of cash expended during those months.

Q. What is the source of those actual cash expenditures?

A. Those are taken directly from the cash books of the company.

Q. Were those cash reports prepared by you?

A. No, they are prepared in my Department, in the Accounting Department, the Treasurer's Department.

Q. Now, if I correctly understand your testimony, the figure which you first secured was the sum of \$5,609,600 for an 18-months' period prior to June 30, 1941, is that correct? A. That is right.

Q. Now, that sum was secured after making certain deductions, was it not?

[fol. 4565] A. That is correct.

Q. Now, who made the deductions? A. I did that.

Q. And those deductions were subtracted from the total amounts shown in the cash reports, is that correct?

A. That is right.

Q. Then you took 45 days of that total 18-months' period to secure the sum which you rounded out to \$470,000, is that correct? A. That is right.

Q. The mathematics of that would be taking 45/547's of \$5,609,600, is that right? A. That is right.

Q. Now, will you enumerate the items that are included in this sum of \$5,609,600 which represent the entire amount before allocation to the 45 days, and will you also enumerate the items that you excluded?

A. Included in the total are gas expense—

Q. (Interposing) And by gas expense—

A. (Continuing) Expense for gas purchased or produced.

Q. The actual cash payments?

A. Actual cash payments by months.

Q. For all gas purchased during the 18-months' period?

A. All gas purchased or produced, yes; other operating [fol. 4566] and maintenance expenditures.

Q. May I ask you to explain what you mean by that latter class?

A. Included in that would be the chief operating expenses of the company, including wages, overhead, and direct expenditures for operations.

Q. That includes overheads? A. Yes.

Q. Does it include payments for wages? A. Yes.

Q. Does it include ordinary maintenance? A. Yes.

Q. And other general operating expenses?

A. That is correct.

Q. What else does it include?

A. Regular construction expense on which no interest is charged during construction. That regular construction expense is of the nature of maintenance and the taxes.

Q. What taxes are included?

A. Included in the compilation is such taxes as production taxes, franchise, sales, workmen's compensation and unemployment taxes.

As I will indicate in a minute, certain other taxes are deducted from this compilation.

Q. Now, have you completed your enumeration of all of the items that were included?

[fol. 4567] A. Those are the only classifications included.

Now, excluded from those total cash expenditures are certain taxes such as ad valorem income taxes and capital stock taxes, both Federal and State; also excess profits taxes.

Also excluded from the above cash expenditures are any amounts which we had paid during those months for materials and supplies, and any amounts which we had made on account of prepayments, the reason for those latter exclusions being that we have made separate claim for those items later on.

Q. - You did not want a duplication?

A. We did not want a duplication.

Q. Will you proceed with the other deductions?

A. Those are all.

Mr. Culton: You deducted interest and sinking fund?

The Witness: The interest and sinking fund were not included. These are purely operating expenses.

By Mr. Littman:

Q. Didn't you also deduct capital items upon which interest during construction was charged?

A. They were never included.

Q. Weren't they included in the cash book?

A. Yes, but they were not included in this compilation. Such items as expansion construction, interest, sinking fund, preferred stock dividends, common stock dividends, other capital items of that kind were never included. [fol. 4568]

The amounts that were included originally were purely operating amounts.

Q. When you use the term "included", what do you mean by that?

A. Included in the amount which you have described as \$5,000,000-odd.

Q. That was the final amount you got after making the deductions? A. Yes, that is correct.

Q. That is, \$5,609,000-odd figure is a net figure after deductions, is it not?

A. That is correct, but it does not include any items of a capital nature.

Q. I understand that to be your testimony, Mr. Sperry, but isn't it a fact that the amounts expended by the company for capital items upon which interest during construction was charged do appear in the cash book?

A. Yes, they go through the cash book, but they do not go in the cash book under the operating items which I have just enumerated.

Q. Who makes the exclusion in that regard?

A. The operating department, that is, the accounting department.

Q. In other words, the cash reports which you receive did not include any capital items in which interest during construction was charged? [fol. 4569]

A. Yes. Let me clarify that.

The schedule from which these figures were taken is divided into two parts; first, operating expenditures, or expenditures of an operating nature, from which I have taken these figures and; second, in a separate classification, capital expenditures or non-recurring expenditures of a capital nature, and the second half of that report I have not used here at all. The figures I testified to are purely operating figures.

Q. What would you say of the item which you did include of normal, regular construction expenses?

A. That is of the nature of maintenance. That is a recurring item which we pay out every month, construction needed to keep our present operating facilities in good condition, and it is simply another form of maintenance.

Q. Aren't such items eventually charged to the capital account? A. No, in many cases they are not.

Q. In some cases they are, are they not? A. Yes.

Q. When are they and when aren't they?

A. I think ultimately the large percentage of them go into our capital account.

Q. Yes.

[fol. 4570] A. But during the period covered by this report, that is, the month to month expenditures, they are not put into our property account.

Neither is any interest charged on account of construction.

In other words, it is money that we expend every month which does not appear in our rate base, and on which we get no credit unless it is included in the working capital for rate making purposes.

Q. Then when this cash report comes to you, there has already been made a segregation as between the normal regular construction expenses of the nature of maintenance on which no interest during construction is charged, according to your testimony, and the capital items upon which interest during construction was charged, is that correct? A. That is right.

Q. You did not make that segregation yourself, did you? A. No.

Q. We will come back to those items a little later. I wanted at this time only to have you summarize the items that were included at Page 457 of the transcript.

You testified, in part, as follows, and I am starting with the last sentence on that page:

"Excluded from this consideration were amounts paid for materials and supplies, pre-payments and ad valorem, income and capital stock taxes as well as payments for interest, sinking fund and other capital expense items".

[fol. 4571] A. That is right.

Q. Now, it was that statement, Mr. Sperry, that led us to believe you had first included and then deducted it.

A. Yes. I can see you might have had that impression. As a matter of fact, capital items such as interest, sinking fund and dividends, were never shown on this schedule.

Q. They were shown on the schedule?

A. No, they were never shown on the schedule.

Mr. Culton: Do you mean they were not shown on the schedule which you prepared for this case?

The Witness: That is right. They have no part in it and they are no part of my working papers.

By Mr. Littman:

Q. But they are shown on the cash reports?

A. They are shown on the cash reports to which I refer as the source of this information.

Q. That was the report that I referred to.

A. Yes. If you will notice my working papers, you will see there are no items of a capital nature, no interest, no sinking fund or dividends, certain operating expenses less certain deductions—let me show you the record from which I took these items.

Q. In other words, you are now, handing me one of the cash reports?

[fol. 4572] A. That is the cash report which I used constantly—

Q. Now, this is an annual cash forecast by months to December 31, 1940, compiled as of January 3, 1941, for Panhandle Eastern Pipe Line Company, and subsidiary companies, is it not? A. That is correct.

Q. Now, you were going to explain some of the figures on this sheet. Will you please do it in such manner so the record will show?

A. I indicated to you that the figures used in my study for purposes of this case were operating figures taken

from the first half of this schedule, the upper half of this schedule, and that such items of a capital nature as interest, sinking fund and dividends were no part of it.

Those appear in the last part of the schedule.

Q. I see.

A: The figures that you have been using from my working papers include no interest or capital items.

Q. You do not mind if we keep this cash report, do you, Mr. Sperry? A: Not at all.

Q. Am I correct in understanding that this cash report [fol. 4573] to which you just alluded and the title of which I just gave, was not a part of your working papers?

A. No, that is not a part of my working papers. That is part of the books of the company.

Q. Now, will you please state how much of this amount of \$5,609,600 applies to the year 1940, and how much to the first six months of the year 1941?

A. That part which applies to the year 1940 was \$3,391,400, and that part which applied to the first six months of 1941 was \$2,218,200.

Q. Mr. Sperry, did Panhandle Eastern Pipe Line Company own any distribution systems in 1940?

A. I believe that we had, I guess, during all of 1940, I believe we owned a small distribution system called the Central Distributing Company.

Q. What was the full name of that company?

A. Central Distributing Company.

Q. Does Panhandle Eastern Pipe Line Company now own that distributing company?

A. No; it disposed of it sometime, I believe, in 1941.

Q. What towns and communities did Central Distributing Company, which you named, operate in, in the year 1940?

A. A number of small and scattered communities in Missouri and Kansas.

Q. Now, what product did the Central Distributing Company distribute?

[fol. 4574] A. It distributed natural gas.

Q. In the year 1940? A. That is correct.

Q. Do you know how many customers it served in 1940?

[fol. 4576] The Witness: Here is approximately the information that you wish. These figures would indicate that Central Distributing Company had around 4000 meters altogether.

Mr. Wheat: When, Mr. Sperry?

The Witness: That apparently was in June, 1940.

By Mr. Littman:

Q. I think that will serve the purpose for the present, Mr. Sperry, and give us some idea as to the size of the distribution system owned by Panhandle Eastern Pipe Line Company through its subsidiary companies in 1940, and I believe you have testified that Panhandle Eastern has [fol. 4577] since disposed of these distribution systems?

A. That is correct, as of January 1, I believe, 1941.

Q. Now, the figures which you used in compiling your estimate of working capital include, do they not, the operating expenses of those distribution systems?

A. That is correct, for the year 1940.

Q. But not for the year 1941 because of the disposition of that company as of January 1, 1941?

A. That is correct.

Q. Now, Mr. Sperry, Panhandle Eastern Pipe Line Company does not propose to go into the business of distributing gas in communities, does it, at least not for the present? A. Not that I know of.

Q. Am I correct in understanding that your working capital figures include the 45 days allocation of payments for wages by the Central Distributing Company during 1940?

A. Included in my figures for 1940 are the Central Distributing figures to the extent of about \$4,000 per month.

Q. For the year, that would be close to—

A. (Interposing) Around \$48,000.

Q. Around \$48,000?

A. To that extent, there may be some distortion in there.

Q. Now, the \$48,000 that you are referring to, is that after allocation?

[fol. 4578] A. That is making no allocation. The amount involved was so inconsiderable and the labor involved of

taking them out of the consolidated figures from which I was working was so great that I did not think it was worth while doing it.

Q. Well, if you had eliminated this \$48,000, what effect would that have had upon your estimate of working capital? A. Very little.

Q. Well, whatever effect it would have had, it would have served to decrease your total estimate, wouldn't it?

A. By about \$6,000 aggregate,—no, it would be less than that. It would be materially less than \$6,000 aggregate, because my study was made as of an 18-months' period, and there is a total of perhaps \$48,000 distortion in the 18 months.

Q. Well, however small the amount, it does not belong in this working capital study, does it?

A. I believe my inclusion of it was for sound reasons, Mr. Littman. Any schedule of this kind, any study of this kind, is bound to be in round figures, not refined right down to the last cent.

There are other things which I could have added to our working capital study of a small nature which I did not add because of the labor involved; and the fact that we had very little time in which to prepare it.

We could have refined this down to a finer figure which, however, for these purposes, I do not think would have been justified.

[for 4579] Q. Wasn't the amount of distribution system expense set out as a separate item in your statement?

A. The statement from which I took these figures is a consolidated statement with inter-company items eliminated.

Q. But wasn't there a separate item shown of distribution system expense?

A. No, that is all in operating expense.

Q. Well, if the amount had been larger, you would have [excluded] it?

A. If there had been any considerable amount capable of distorting the answer, I certainly should have taken it out.

Q. Don't you have access to the records that were used to make up the consolidated statement?

A. Yes, we could go back to the original books and break them down, but it would have been a matter of great labor.

Q. Couldn't you have gone back to the original statement from which the consolidated statement was made?

A. Sure, we could have, if we had had time.

Q. That would not have taken much time?

A. Yes, this is quite a job to do on short notice.

Q. Well, at any rate, it is your best estimate at present that \$6,000 would be approximately the amount?

A. It would be less than \$6,000.

Mr. Wheat: The witness testified it would be materially less than \$6,000 which I have just taken down in [fol. 4580] notes from his testimony. Is that true, Mr. Sperry?

The Witness: That is right. It would be about 1/18th's of \$48,000, I would say.

By Mr. Littman:

Q. You will agree that, as a matter of principle, distribution system expenses should not be included in working capital for purposes of this proceeding?

A. No, I would not admit that. I have no opinion on that.

Q. You mean to say that you would include amounts incurred in connection with the operation of distribution systems in your estimate of working capital, even if you knew that you could very quickly ascertain the amounts and deduct them for purposes of this rate proceeding?

A. I have no opinion on that, Mr. Littman. I have not studied that phase of it. Panhandle Eastern is not predominantly a distributing company. It is a wholesale company.

Q. It is not a distributing company at all, is it?

A. Not at the present time, no.

Q. Now, on what theory would you want to include any distribution system expense for purposes of this rate proceeding?

A. I am not prepared to answer that. I have not studied that phase of it.

[fol. 4581] Q. You do not know that much about working capital?

A. I do not know that much about rate regulation.

Q. Well, do you know enough about the subject of working capital to testify in this proceeding on the subject and submit an estimate on the subject for this Commission's consideration?

A. My effort has been here to accurately estimate the amount of dollars that is required by this company to have at all times to carry on its business, and I base my opinion only upon the experience that I have had sitting on the top of the till, watching the money go out.

I think that my figures adequately and accurately represent the amount of dollars which it has been necessary to pay out over a specified period, and I believe that we are justified in asking for a return on that number of dollars.

Q. You have in your last answer referred to proper amounts of working capital required for the purpose of carrying on the business.

A. That is right, operating the business.

Q. Now, what business is Panhandle Eastern going to be engaged in for the next three or four years, to the best of your knowledge?

A. I assume it is a continuation of our present business.

Q. Which does not include, in any part, the operation of distribution facilities, is that correct?

[fol. 4582] A. I think that is correct.

Q. Well, certainly you know enough about working capital, Mr. Sperry, to know that there should not be included in an allowance for working capital in the future, any sums that are related to the operation of distribution systems?

A. As I say, I have no opinion on that. I have not studied that, but I say this, that even if that inclusion is an improper one, as you intimate it is, it does not amount to over two or three thousand dollars in the aggregate.

Q. Is it or is it not a proper one?

A. I do not know, frankly.

[fol. 4585] Q. Who made the determination, Mr. Sperry, as to what items should be included and what items should be excluded from working capital?

A. I think I will have to take that responsibility.

Q. Well, you feel competent to do that, do you?

A. As I told you, I feel competent to estimate rather accurately how many dollars have gone through the till and for what purposes, and how many dollars it is necessary for us to have in the till to continue the operation of our business efficiently.

That is the only point to my study. I am not trying to interpret rate cases in any way. I am trying to determine how many dollars it is necessary for us to have and on which I think we are entitled to a return.

Q. For rate making purposes?

A. For the purpose of this study, yes.

Q. The thing I want to get clear, in view of counsel's statement, is whether you were making this study for rate making purposes or whether you were making it for some other purpose? Which one did you make it for?

A. I made it for purposes of this proceeding.

Q. For rate making purposes?

A. But understand, Mr. Littman, this is a mathematical compilation, nothing else. I am not trying to philosophize about rate making at all. I am simply trying to [fol. 4586] ascertain the number of dollars it is necessary for us to have in order to do business.

Q. It isn't just mathematical, is it, Mr. Sperry?

A. Pretty much, yes.

Q. There is pretty much judgment involved in inclusions and exclusions, is there not?

A. Very much so, yes.

Q. And how much should be allowed for this, that or the other item, is that correct? A. That is right.

Q. Well, suppose you knew that there was, let us say, half-a-million dollars of distributing system expense in your final estimated figure. Would you say that that amount should go out or should stay in?

A. I do not know, but I certainly should study it more carefully than I did when \$2,000 or \$3,000 was involved.

Q. You did not study it very carefully?

A. I did not study that principle, no. I left Central Distributing figures in because I thought they did not fundamentally distort the picture, and it was a matter of some labor and some difficulty to get them out.

Q. But, as a matter of principle, you are not prepared to testify whether those distributing expenses should stay in or go out?

A. That I will not pass on, no. I do not know.

[fol. 4587] Q. I believe you said that the amount of the distributing expenses would be approximately 1/18th of \$48,000. Wouldn't it be more correct to say 1 1/2/18th's of \$48,000 in view of the 45-day period?

A. I would think so, yes—wait—we are talking about the aggregate of the moneys involved before the 45-day period applies. We are talking about the \$5,000,000 total, aren't we?

Q. Yes.

A. In the \$5,000,000-odd total, there may be a possible distortion here of \$48,000. If you correct that to a 45-day period, then I should think it would be 1 1/2/18th's.

Q. Rather than 1/18th?

A. Yes, I think that is correct.

Mr. Wheat: May I ask a question for clarification. You mean, do you, Mr. Sperry, that 1 1/2/18th's of \$48,000 would be the outer limit of the distortion you mentioned?

The Witness: Yes, in this \$470,000 item concerning which we have been talking. ○

By Mr. Littman:

Q. I believe you mentioned something about not having sufficient time in which to make the elimination of the distribution system expenses.

If you had had sufficient time, would you have made the elimination?

[fol. 4588] A. Had we had sufficient time, we might have taken a different approach to this whole study. I do not know. We had a limited time, and I did the best I knew how in that period.

Q. Did you receive any instructions from anyone as to how to prepare this entire study?

A. I do not think I did, very much.

Q. Well, your answer indicates you received some little instruction. Who instructed you?

A. I think I had some guidance from our counsel as to how this thing had been approached in the past by

other companies, but the work on it is mine and I will have to stand or fall on it.

Q. By counsel, you mean Mr. Culton?

A. Mr. Culton.

Q. Did you and Mr. Culton discuss distribution expenses?

A. I did not think that was ever mentioned, no.

Mr. Culton: I told you, did I not, to determine how much money you, as Treasurer of this company, thought should be on hand at all times for general running expenses of the company?

The Witness: That is right.

Mr. Culton: And that is as far as my instructions went?

The Witness: That is right.

By Mr. Littman:

Q. Do you have a copy of Exhibit 49, which is Mr. [fol. 4589] Watkins' exhibit? A. No, I have not.

Q. Showing the income statement?

A. No, I haven't got it.

Trial Examiner: I will hand the witness my copy of Exhibit 49, if you wish.

The Witness: Thank you.

(Whereupon, a document was handed the witness.)

By Mr. Littman:

Q. Are you familiar with this exhibit, Mr. Sperry?

A. I think this is the first time I have seen it, probably.

Q. Now, I refer you to Line No. 9 on schedule I of Exhibit 49 which shows the operating and maintenance expenses and I refer you to Column J for the year 1940, which shows the operation and maintenance expense for that year to be \$3,000,764.52. Do you find that figure?

A. Yes.

Q. Does that comport with your understanding as Treasurer of the company?

A. Does that what?

Q. Does that comport with your understanding of these figures? Does that figure look correct to you?

A. If it is Mr. Watkins' work, it certainly is correct. I think.

[fol. 4590] Q. Now, what was the average for the entire 8 $\frac{3}{4}$ year period shown in this exhibit as shown in Column L? A. The average?

Q. Yes.

Mr. Wheat: You mean, what does Mr. Watkins show in Column L on Exhibit 49, the average, is that correct, Mr. Littman?

Mr. Littman: That is correct, and I think what I said is correct, too.

Mr. Wheat: Probably, but I wanted to make sure.

The Witness: You refer to the figure of \$1,787,885?

Mr. Littman: Yes.

By Mr. Littman:

Q. You did not use the recorded operating expenses in arriving at the normal cash funds for working capital, did you?

A. No, I used cash figures completely.

Q. Which cash figures were taken from the cash book as you have heretofore testified? A. That is right.

Q. Now, the figure that you arrived at for the year 1940 is approximately \$391,000 more than the recorded operation and maintenance expenses in that year, is that correct?

A. You are referring to what, my figure of \$3,391,400?

Q. That is correct.

A. That figure is greater than the operation figure in Line 9 under Column J.

[fol. 4591] Mr. Wheat: Of Exhibit 49.

The Witness: Of Exhibit 49; but I call your attention to the fact that this figure of \$3,391,400 includes some taxes which are not included in operation and maintenance expenditures on the income account.

It may include some other things too. They are not comparable, however.

By Mr. Littman:

Q. It includes construction items, too, does it not?

A. Yes. You cannot compare operating figures with cash figures, Mr. Littman, without elaborate reconciliation.

Q. I am not undertaking to make a direct comparison, Mr. Sperry. A. No.

Q. But it is a fact, is it not, that two items that would account at least in part for the difference between the cash book figures and the recorded figures are taxes and certain construction items, is that correct?

A. Certainly those, and maybe some others, I do not know. I have not analyzed this carefully yet.

Q. Will you state the amount of charges to plant account that are included in your allowance for working capital before the 45-day allocation?

A. I do not understand that question. Would you please read it to me?

[fol. 4592] The Witness: For the year 1940, a total of \$461,500. For the six months ending June 30, 1941, \$483,100.

By Mr. Littman:

Q. That makes a total of \$944,600 of charges to plant account that are included in your allowance for working capital, is that correct?

A. That includes the amount of dollars which we spent in that 18-months' period for regular construction of the nature of maintenance.

Q. Isn't it a fact that this amount of \$944,600 represents charges to plant account and not maintenance?

A. I cannot answer that accurately at the moment. In our business, it is necessary for us to regularly spend money for the maintenance of our property in such a way as to classify it as regular construction, recurring construction of the nature of maintenance on which no interest is charged for construction, and those are the items to which I refer.

Q. Well, "of the nature of maintenance", to use your term would, of course, not mean maintenance, isn't that correct?

A. It is very similar to maintenance. It is construction that is needed in order for us to carry on our present business without any reference to expansion.

Q. Didn't you just testify a minute ago that none of [fol. 4593] this amount of \$944,600 is included in Line 9.

of Exhibit 49, Schedule 1, called "Operation and Maintenance Expense"?

A. No, I did not say that. I do not know whether any of it is or not. I am not talking about the earnings records at all. I am talking from cash records, and my point here is that regularly our company has to use this kind of cash in these amounts in order to maintain our present property.

Q. You are not prepared to say whether any part of the \$944,600 is charged to maintenance?

A. I really do not know, no. I do not think it is charged to maintenance. It is charged to regular construction.

Now, what it is charged on the earnings records, I do not know. I am not talking from the earnings record here at all.

Q. What are you talking from?

A. I am talking from cash records. I am trying to indicate fairly how much cash it has been necessary for us to have in the till right along for certain purposes.

Q. Perhaps this will clear up the matter, Mr. Sperry.

It is a fact, is it not, that the \$944,600 that you mentioned represents capital charges to plant account, does it not?

A. It may, or they may be earnings items, I do not know. I am not the accounting officer of the corporation. I do not account for these things in the earnings records.

[fol. 4596] By Mr. Littman:

Q. Mr. Sperry, at Page 456 of the transcript, your counsel asked the following question and you made the following answer:

"Q. Are the items included in your study or are any of them included or reflected in the plant accounts of the corporation?

"A. No. None of the items included in my study are reflected in the plant account."

[fol. 4598] Q. In view of the answer that you gave to the question which I read, you undertook in your direct testimony to testify with respect to what is and what is not

included in the plant accounts of the corporation, did you not?

A. Yes. I stand on that testimony.

Q. With respect to what?

A. The items included in my study.

Q. Now, are you prepared to tell us how the \$945,600 that you mentioned a moment ago is charged on the books of the company?

A. Again, I would like not to be questioned on how the accounts run. I am not an accounting officer. I know that we had expenditures of those amounts during those particular months for those purposes.

My testimony will go only to the amount of cash which we have had to pay out for certain purposes in the corporation.

Now, if you want to examine how those are subsequently accounted for, or how they are currently accounted for, you will have to ask the accounting officer.

Q. Regardless of how the items are charged on the books of the company?

A. My testimony goes only to a cash study.

Mr. Littman: If your Honor please, I think that at the time this witness made this study, he made it for the purpose of showing the amount of working capital to be added [fol. 4599] to Mr. Biddison's reproduction cost, and I do not think that the witness was particularly disturbed for that reason with what was or what was not charged to capital or expense, and he was not concerned with how these items were charged on the company's books.

However, in view of the fact that your Honor has excluded reproduction cost evidence in this proceeding, leaving in the evidence of book cost and original cost, it is of greatest importance for this record to show how these amounts are charged, whether they are charged to capital or whether they are charged to expense, and that, if your Honor please, is why I am so insistent upon having this witness enlighten us.

Now, if he does not know, of course we cannot secure the answer from this witness, but it seems to me that in the light of what has transpired on this record, counsel for

the company is under obligation to have the record show how these amounts were charged.

Mr. Wheat: Have you asked him directly, or do you want now to ask him directly, whether he knows or does not know?

Mr. Littman: I thought I had asked him that several times, but I shall try again.

Trial Examiner: The Trial Examiner put that question very definitely, and the witness has now declared that he stands upon his answer to the question quoted by Mr. Littman on Page 456.

[fol. 4600] The question to which the witness then responded was:

"Are the items included in your study, or any of them, included or reflected in the plant accounts of the corporation?"

Now, it would seem to the Trial Examiner that this witness might care to somewhat review that testimony with counsel and develop whether or not we have contradictory statements which appears to the Trial Examiner have developed in the record this morning.

[fol. 4601] By Mr. Littman:

Q. If I correctly understand your testimony, you do not know how the amount of \$944,600 was charged on the books of the company, do you?

A. I don't know where it found its way ultimately.

Q. You can't give us any idea of approximately how much of the amount found its way into the plant account and how much found its way into operating expenses?

A. I can't at the moment, no. I will say this: That at the time that that money went out of the till, at the time that money was expended it was no part of plant account nor did we receive any return on it as a part of plant account.

Mr. Wheat: You mean it was no part of the plant account.

The Witness: It was no part of the plant account.

By Mr. Littman:

Q. By the term "return" you mean you received no interest on these amounts?

A. I mean it could not have been part of our rate base; it was not part of our plant account.

Q. What is, at that time?

A. At that time.

Q. But may have become later?

A. It may have subsequently, surely.

Q. When you made the answer to which I called your [fol. 4602] attention a moment ago on page 456 of the transcript were you referring to all the items in working capital or—

A. (Interposing) Is that the answer "No, none of the items included in my study were reflected in the plant account."?

Q. Yes.

A. Yes, I believe the answer to your question is yes. I took pains to ascertain carefully that none of the items in my study were being used by Mr. Biddison in his study, either materials or supplies or construction expenditures. In other words, there is no overlapping between Mr. Biddison's figures and my figures.

Q. You were referring to Mr. Biddison's reproduction cost net less depreciation?

A. His appraisal of our plant account, yes, sir.

Q. You know, do you not, that Mr. Biddison included certain work orders in his reproduction cost, do you not?

A. No, I don't know his method of approach, but I do know that in the preparation of my work I went over carefully with the Accounting Department to make sure that none of the items which I was using in my study were being used in his. We reviewed that with some care.

Q. But you can not make that statement with respect to relating your working capital to book cost or original cost, can you?

The Witness: Will you read that please?

[fol. 4603] (Whereupon, the pending question was read by the reporter.)

By Mr. Littman:

Q. If you don't understand that question, perhaps I can clarify it.

Is your estimate of working capital referable to original cost or book cost?

A. It has nothing to do except with the cash figures of outgo.

Q. Well, of course, actual cost is actual cash, isn't it?

A. Yes, but any cash that went out of our company for plant upon which we thereupon obtained a return on our rate base is not included in my figures for working capital. In other words, our expansion expenditures, for instance, construction expenditures for expansion which are capitalized and on which interest is charged during construction are no part of my study.

Q. Do you know whether or not the company includes on its books work orders against which no interest during construction is charged?

[fol. 4604] The Witness: I think it is. I am groping a little bit at it.

Is that another way of asking whether any of this construction of the nature of maintenance, which we have been discussing, is covered by work orders?

Mr. Littman: That is one part of it.

The Witness: That might be.

By Mr. Littman:

Q. But you don't know for sure?

A. I don't know offhand, no. I think it is probable.

Q. Well, let me get at it this way, Mr. Sperry: The company does capitalize amounts upon which no interest during construction is charged. Is that correct?

A. Yes.

Q. Now, can you tell by looking at the cash book, Mr. Sperry, upon what items interest is charged and upon what items interest is not charged?

A. I don't know whether the cash books would show that or not. I assume they would. Again, I would like to disclaim knowledge of the accounting of it. I would rather have Mr. Watkins answer those questions.

I know this: The items which I have included here in my working capital study have carried no interest during construction. We have had no return on them.

Q. How do you know that?

[fol. 4605] A. Well, I know it by definition. That is the way these items on my cash forecast were set up, the construction work of the nature of maintenance on which no interest is charged during construction.

Q. Why is not interest charged during construction on some of those?

A. I don't know. I suppose because it is of the nature of maintenance.

Q. Well now, someone in your company makes the decision with respect to what items shall carry interest charges and which ones shall not. Is that correct?

A. That would be the accounting officer, I would say.

Q. When is that decision made?

A. I don't know.

Q. Isn't that decision made not from the cash book but by the accounting officer from the work orders?

A. I assume it is made at the time construction budgets are approved. We divided our construction into two different kinds of construction, first, the construction which we have been talking about here this morning and, second, the expansion construction.

They take the form of separate budgets and they are separately accounted for on that cash forecast sheet, if you will notice. On the expansion construction we carried out, interest is charged.

[fol. 4596] On the regular maintenance construction which is necessary to support the present level of business, which has nothing to do with expansion, interest is not charged. That takes the form of the items we have discussed here, normal construction expenditures of a maintenance nature.

Q. Well, who made the determination for your purposes as between the items upon which interest is charged and the items upon which interest is not charged?

A. The Accounting Department which prepares that cash sheet.

Q. I call your attention, Mr. Sperry, to the \$461,500 figure which you read into the record a moment ago as rep-

representing the charges to plant account included in your working capital allowances for the year 1940 which are referred to in the annual cash forecast, which you used in preparing your estimate, as "Construction-Regular".

A. That is right.

Q. How do you know that no interest is to be charged on that amount of \$461,500?

A. That no interest will be charged on it or that no interest has been charged on it?

Q. Well, that no interest has and no interest will.

A. I am told by the Accounting Department that no interest is charged on that.

Q. And were you told by the Accounting Department [fol. 4607] that no interest will be charged on that amount?

A. If any of that item finally finds its way into the plant account when the books are closed, interest may then start to accrue. It may go into the regular plant account, but at the time these funds are spent no interest is being charged.

Q. Well, obviously, no interest is charged until the money is actually expended, isn't that correct, in any event?

A. That is right.

Q. So that when such part of this amount of \$461,500 as will be capitalized on the books of the company does finally become capitalized and interest is then charged thereon for construction, you then have a duplication of that extent in your estimate, do you not?

Mr. Culton: You said "If that is done", did you not?

Mr. Littman: When it is done.

Mr. Culton: There is no testimony that it will be done. He testifies that it goes into plant account and, of course, if they are after interest—

The Witness: (Interposing) If that money should be allocated to plant account, then it becomes part of our rate base upon which we are entitled to earn a return, but until [fol. 4608] it goes there and while it is being spent here, the company is not obtaining any return on it unless it is included for rate-making purposes in the working capital allowance.

By Mr. Littman:

Q. Well, doesn't the amount go to plant account the moment it is spent? A. No, I don't think so.

Q. You are not sure about that?

A. No, as I say, I don't know the accounting of these items, I know that the money is being spent.

Q. Well, does the company expend any cash for interest during construction? A. No.

Q. Therefore, interest during construction never appears on the cash book which is the book that you studied?

A. Interest during construction is a book item, it is not a cash item.

Q. And, therefore, the interest during construction never appears on the cash book?

A. I would think that was correct.

Q. And the figures that you used for purposes of this study were the figures that were derived from the cash book. Is that correct?

A. That is right.

Q. So that you can not tell from the cash book or from [fol. 4609] figures derived from the cash book actually how much has been expended for interest during construction, can you?

A. We don't expend interest.

Q. Well, how much is charged for interest during construction?

A. If it is a bookkeeping item, purely and simply, it doesn't appear on the cash books anywhere.

Q. Well, will you explain briefly the company's policy with respect to interest during construction?

A. I can't do that, Mr. Littman.

Q. You can't tell us, for instance, the rate of interest that is charged? A. No.

Q. Or the period of time over which interest is charged?

A. No.

Q. Or the minimum size of the job upon which interest is charged? A. Those are accounting matters.

Q. Well, you do not, then, know of your own knowledge whether the sum of \$944,600 of charges to plant account in the year 1940 and the first six months of 1941 are those upon which no interest during construction was charged?

A. Yes, I know that interest was not charged.

Q. You know that of your own knowledge?

A. I know it by definition on our books.

[fol. 4610] Q. I am asking if you know it of your own knowledge.

A. If you mean have I seen the accounting of it, no. The Accounting Department has represented to me that no interest is being charged on the items for construction which I have included in my working capital study.

Q. Well, assuming, Mr. Sperry, that the entire amount of \$944,600 was charged to plant account on the books of the company, would you say that the entire amount is properly includible in an estimate of working capital for purposes of this proceeding?

A. Certainly. The fact remains that we have spent that money and haven't had a return on it.

Q. And the only reason why no return has been had on that amount under those circumstances is simply because the company, itself, elected not to charge any interest on that amount during construction. Is that right?

A. The reason it hasn't had any return is that it is not part of our rate base; unless it is included in working capital, it is not part of our plant account.

Q. Well, will you answer my question, specifically, Mr. Sperry?

* * * * *

The Witness: The company elected to account for it in this way rather than to immediately capitalize it? Is [fol. 4611] that what you mean?

By Mr. Littman:

Q. I am assuming that the amount is capitalized, Mr. Sperry, and I am asking you whether or not the company's failure to receive a return upon these capital amounts is due to its own election to not charge interest during construction.

A. It is due to its own chosen accounting methods, yes.

Q. And now what you are proposing to do is to change that accounting method? A. No, not at all.

Q. To change the election?

A. No, not at all.

Q. That is the effect, isn't it?

A. I simply propose to seek to include these sums in our working capital allowance as being recurrent monies that are spent month in and month out and on which we

do not get a return unless it is included in our working capital allowance.

Q. And the effect of doing what you propose will be the same as if the company had originally elected to charge interest on those amounts?

A. That may be so.

Q. Well, it is so, isn't it, Mr. Sperry?

A. I don't know whether there would be any practical difference or not. I don't see any at the moment.

[fol. 4612] Q. Mr. Sperry, assuming that this amount of \$944,600 represents construction that was completed on the average of, let us say, three months, the company would have ordinarily, had it charged interest during construction on this amount, charged three months' interest on it, would it not?

A. You will notice that those amounts are expended over a period of 18 months almost regularly and recurrently, so that the average time would be nearer nine months rather than three months.

Q. How long are these amounts kept in the construction-work-in-progress account?

A. Again, I don't know how or when those monies are accounted for.

Q. Well, assuming that it is three months, the actual interest charged by the company would cover a three-month period, would it not?

A. Had they been capitalized and interest been charged?

Q. Yes.

A. I would assume so. Again, that is an accounting matter.

Q. And under your method, you are capitalizing the entire amount and asking for a return, an annual return on the entire amount, are you not?

A. No, only for 45 days. We are asking for a return [fol. 4613] on 45 days.

Q. An annual return? A. Yes.

Q. For each year in the future?

A. In other words, we have averaged these amounts for 18 months and then asked for an allowance of 45 days' return.

Q. The amount of interest capitalized is determined as a matter of managerial judgment as to the proper amounts and methods, is it not?

A. I suppose so, yes.

Q. You are not familiar with those methods? A. No.

Q. You mentioned a moment ago that the period that you took for interest during construction and, as a matter of fact, for the entire cash amount was 45 days, did you not?

A. No. You asked me, I believe, if we were claiming this whole amount, the full 18 months period. I said "No", that we were asking for a return, not on the 18 months period, but on a 45-day period.

Q. Yes. Now, how did you determine that 45-day period?

A. It is arbitrary and a matter of judgment on my part.

Q. I am speaking now of the 45-day period for purposes of interest.

A. I am talking about the 45-day allowance for all working capital items.

[fol. 4614] Q. Yes. Now, let's talk about a 45-day period for this particular item, namely, the item of interest during construction. How does the 45 days stack up with the company's own experience in charging interest during construction?

A. I don't know.

Q. You don't know whether 45 days is right or not with respect to the company's own experience?

A. My theory on the 45 days is that all items of working capital for the 45-day period are equally applicable to all items which we have claimed for working capital and one of these items is the amount which we have spent for recurring construction in the nature of maintenance.

Q. Well now, you have already testified that you do not know the period of time over which interest is charged by this company. A. No.

Q. Is that correct?

A. That is on expansion projects, which we are not talking about here at all.

Q. Well, I am talking about the \$944,600, Mr. Sperry.

A. That is right.

Q. And I am speaking about the 45 days which you applied. A. That is right.

Q. Now, you have testified, have you not, that you were [fol. 4615] not familiar with the company's policy with re-

spect to the period of time over which interest is charged by the company?

A. No, that is an accounting matter about which I can't testify.

Q. In other words, my statement is correct, that you are not familiar with that matter. Now, how can you say that the 45-day period that you used with regard to this particular item that we are now discussing is correct or not?

A. I don't say it is correct or not; I say that on all items of working capital, including this one, we have arbitrarily asked for a 45-day allowance.

Q. Well, it is just an arbitrary matter, is it?

A. That is a judgment factor.

Q. Judgment of what?

A. It seems to us that that is a reasonable and representative approximation of the lag period as applied to working capital expenditures and we believe consistent with the practice before Power Commissions.

Mr. Goodman: You mean by the "lag period" the period between the provision of the money and reimbursement?

The Witness: Yes, the initiation of service to the customer and our repayment therefor.

Mr. Goodman: By that do you mean the period between the monetary provision and the reimbursement? Is that what you mean?

[fol. 4616] The Witness: That is right.

By Mr. Littman:

Q. What does the lag period have to do with the period of time over which interest during construction is charged?

A. I don't believe that I represented that it did have anything to do with it. I said this: That there are certain items of working capital, of cash for these various purposes which we would like to have as an allowance. Those items aggregate over a period of 18 months almost five odd million dollars of money that goes out of the till for these particular purposes.

Now, in asking for a working capital allowance, we have to assume a lag period. We have assumed 45 days as an allowance, as a reasonable and representative allowance.

Q. Does that have anything to do with the company's experience? I am now referring to the 45 days.

A. Yes, it is predicated on the company's experience.

Q. Do you expect to get your construction expenditures back in 45 days?

A. Mr. Littman, I don't believe that that is the point.

Q. Well, the point is that the 45 days doesn't have anything to do with the period of time over which interest is actually charged by the company. Isn't that correct?

A. We pay out regularly and monthly certain amounts of money for various purposes, cash, which, as we have [fol. 4617] developed this morning, aggregate five million odd dollars over a period of 18 months. Now, in that one of those items is regular recurrent construction expenditure in the nature of maintenance. In my opinion that is a perfectly sound basis for including that in your working capital requirement.

Q. Do you know whether these items replace other items of construction?

A. No.

Q. In many instances they do, do they not?

A. I don't know.

[fol. 4618] By Mr. Littman:

Q. To the extent that it does replace other items of construction, then to that extent the replaced items are in the rate base, are they not, already?

A. Yes, I would think so.

Q. And return has been earned by the company and is presently being earned by the company on those items, is that correct?

A. That might be. I would think that that is so. Without having more time to think through your question I think that is right.

Q. Now, I believe you stated here recently that these expenses in the nature of maintenance or charges in the nature of maintenance are constantly recurring.

A. Yes.

Q. What do you mean by that? They are rather static?

A. No, I mean that they have these expenditures. These expenditures occur to a varying degree each and every month. There is no month in which they do not occur.

Q. The fact of the matter is that they are not static, isn't that correct?

A. Yes, they fluctuate.

Q. And construction fluctuates considerably from year to year, doesn't it?

[fol. 4619] A. Well, this type of construction has been fairly consistent, I think, over a period of years.

Q. It wasn't very consistent in the last 18-month period, was it?

A. Well, let's see. It was considerably more per month in 1941 than it was in 1940. It averaged in 1940 about \$40,000 a month. This year it has averaged about \$80,000 a month.

Mr. Wheat: Pardon me, you mean the first six months.

By Mr. Littman:

Q. That is a fluctuation of 100 per cent, isn't it?

A. Yes. That is quite a fluctuation.

Q. I would say it is too.

A. There was one month, May, in which we expended \$118,000 for this type of construction. I can't tell you why at the moment.

Q. Then your allowance, which is based partly upon construction expenditures for this 18-month period, can hardly be called a normal or equalized cash requirement, can it?

A. No, I would say that this indicated clearly that our expenditures are increasing all the while for this type of construction and that the average for the first six months this year was probably more representative of what it is going to be. The item shows a tendency to increase here.

Q. You mean in the last six months?

[fol. 4620] A. Yes, the last six months here in 1941 have required a materially larger amount of money than they did in 1940.

Q. Have you checked to ascertain what the situation was for the last six months of 1941?

A. No, my cutoff date is June 30. The estimate which we prepared on July 8 indicated it would be substantially more the last six months of 1941 than it was the first six

months. I don't know whether that has been borne out by experience, but that was the estimate.

Q. The company wasn't able to get a good deal of pipe that was on order, isn't that correct?

A. If that was pipe, that would probably be construction expenditure for expansion purposes and wouldn't be included in this category.

I haven't the December figures, but our estimate through November would make it appear that we had spent in the last six months more than we spent in the first six months; but about \$200,000 less than we expected to spend. In other words, our total of this category for the 12 months ending December 31, 1941 shows this item to be \$961,000 with one month estimated as against \$1,100,000 with six months estimated.

Mr. Culton: Do you have the actual figures through November?

The Witness: I have the actual figures through November and they would indicate that the acceleration in [fol. 4621] that item has continued.

By Mr. Littman:

Q. Will you please refer to Exhibit 52, which is the exhibit prepared by Mr. Watkins showing the gas plant? Will you please refer to page 2 of that exhibit? On line 38 of page 2 is shown the total gas plant classified amounts for each of the years 1930 through June 30, 1941.

A. That is item 42, you say?

Q. No, line 38.

A. Pump station equipment.

Q. On page 2.

A. Yes.

Q. Now, in 1940 these figures show that there was approximately \$5,000,000 more construction than in 1939. Is that right?

A. It shows that the overall gas plant had increased by that amount a little over \$5,000,000 during that period.

Q. In the preceding period there was a slight increase?

A. Yes.

Q. And there is a slight increase in the previous period, 1937-1938?

A. Yes.

Q. Then, there was considerable construction between 1936 and 1937, is that correct?

A. Yes.

[fol. 4622] Q. In other words, it shows a considerable fluctuation through the years, does it not?

A. It shows we added a lot of property in 1937 and a lot more in 1940, but in the intervening years not so much.

Q. Do you have Exhibit 49 before you?

A. Is that Exhibit 49 and the same line?

Q. I am referring to line 9 of Schedule 1 of this Exhibit, headed "Operation and Maintenance Expenses". Isn't it a fact that the average operation and maintenance expenses for the years 1932 to 1940 are considerably less than the 18-month period that you have used?

A. Sure, they are bound to be. We were doing very much less business in those earlier years. Furthermore, that trend upward is continuing now at a very fast rate. Our operation expenditures increase every year and will increase at a faster rate from now on.

Q. And why did you select the last 18 months as the test period?

A. That came about in this way: In trying to find a formula to develop these figures, trying to find a simple way of presenting them, I took the first full year's figures which I had at my disposal, which was the calendar year 1940.

Having compiled those figures, I then brought them down to the nearest date which I could, which was June 30 at that time, 1941, and I noticed that the 1941 figures were [fol. 4623] very much higher than the 1940 figures. On the other hand, in the interest of conservatism, I used the whole 18 months instead of the last six. We could have improved our case materially by using the last six, but I felt that it was proper for me to use the longer period.

Q. Now, referring to your 45-day period, which you have already described as a lag period, did you make a study to determine the actual elapsed time between the payment of operating expenses and the receipt of revenues?

A. No, sir; I did not. That would have involved a good many weeks' work which we didn't have at our disposal.

Q. It would have been desirable to do that, would it not?

A. If we had had lots of time that could have been done; we didn't have. Furthermore, the precedents for this particular period seems to be very adequate. Regulatory commissions have accepted it in a great many cases and it rather squared with my own judgment from experience on this lag, and so I used it arbitrarily. It is a judgment factor and I can defend it only on the basis of judgment.

Q. That judgment was not based upon a study of the company's actual experience, was it?

A. No, I talked with our accountants about that and I found that they had in one other case made an elaborate study of lag. I went over their approach to it. It was a [fol. 4624] scientific approach but a very involved one. It would have taken weeks to work out and we just didn't have that time. Furthermore, it, in my opinion, would not have altered the answer very much.

Q. How do you know?

A. I should have liked to have asked for an amount sufficient at all times to cover sixty days but, in my opinion, 45 days is a safe minimum and a conservative period for which to ask.

Q. That is based on court decisions and commission decisions that you have read?

A. It is based primarily on my own judgment as to how much cash you ought to have and it is consistent with opinions in other representative cases.

Now, in the case of the Natural Gas Pipe Line Company they approached it more scientifically. Their company is very similar in some respects to ours. They claim 49-odd days, I think. We are claiming a little less than that.

Hope Natural claimed 45 days.

There have been others..

Q. Well, let's test your 45-day period, Mr. Sperry, with the actual experience of the company. What is the largest item of cash operating expense of your company?

A. Wages, I would say.

Q. What would you say of gas purchased expense?

[fol. 4625] A. I don't think that is as large as wages, but it may be.

Q. Well, I think you will find that that is the largest.

A. It may be.

Q. At any rate, it is one of the largest?

A. That is right, it is one of the largest.

Q. Will you read into the record the amounts paid by Panhandle Eastern in 1940 for gas purchased?

A. Instead of gas purchased, let's call it "Gas Expense", because that is the item that I have here and I am not sure that they are synonymous. There may be some produced production expense, gas expense.

Q. We understand that is the amount paid by Panhandle Eastern to its gas vendors for gas purchased.

A. Yes.

Q. Very well.

A. In round figures, \$1,187,000.

Q. \$1,187,000?

A. Yes.

Q. And what was the amount for the first six months of 1941?

A. \$676,000.00.

Q. And that is a total of \$1,863,000, is it not?

A. Yes.

Q. That is included for the 18-month period in the [fol. 4626] amount of \$5,609,600, which you referred to a while back?

A. Yes.

Q. Now, on what day of the month are gas purchases paid for by Panhandle Eastern Pipe Line Company?

A. We usually pay for our gas on the 20th of the month.

Q. Now, on what day of the month are gas revenues received?

A. That varies but a majority percentage is usually paid from the 23rd to the 26th of the month following its sale. In other words, if we start delivering gas to Detroit on the first day of January, we usually get paid for it on the 25th or 26th day of February. Now, there are exceptions to that, but in general that is the predominant part.

Q. Now, when is payment made for the gas purchases?

A. They are payable on the 20th of the month following the take-out.

Q. In other words, the payments for gas purchased and the receipts for gas sold are on a comparable basis, are they?

A. No, not quite.

Q. Well, except the one that is on the 20th and the other is around the 25th.

A. No, not exactly that either.

Q. What is the situation?

A. We purchase substantially all our gas on a fiscal [fol. 4627] month basis with a cut-off on the 22nd of the month. We pay for it less than 30 days later, the 20th of the following month.

In the case of gas deliveries we start delivering on the first of a month and we collect about 55 days later, so there is a difference in lag there, you see.

Q. Let's see if I understand your testimony correctly. The revenue derived by Panhandle Eastern from gas sold by it is received not later than the 26th of the month?

A. Approximately, of the following month.

Q. Following the month of delivery?

A. Following the month of delivery, yes.

Q. And am I correct in understanding your testimony to be that the payment for gas purchased by Panhandle Eastern is made on the 20th day of each month following the date of delivery?

A. Yes. Not following the date of delivery, it is following the date of billing. They usually read our meters for gas delivered around the 22nd or 23rd of the month. We pay for it the 20th of the following month. We have had that gas.

Well, in these circumstances which you have described there really isn't any lag at all in it?

A. Yes, there is some lag.

Q. That is, lag between the purchases and the payments. You say there is some lag?

[fol. 4628] A. Oh, yes, there is some lag. It is pretty hard to determine just exactly what it is, Mr. Littman.

Q. Well, the lag is in favor of the company, isn't it?

A. Oh, no.

Q. Why isn't it?

A. Well, let's start with the 22nd of the month when they read our meter and charge us for some gas. We pay for that gas the 20th of the following month. We start service to our customer on the first of the month, we get paid 55 days afterwards or thereabouts or the 26th of the following month. During that time it is necessary to carry some of that gas, I mean carry the customer for some of that gas. There is some lag. It is pretty hard to tell just exactly what it is, but there is some lag there.

Q. How much of a lag is there?

A. I don't know. I am frank to say I have spent some time trying to determine what the lag is, but it is one of those things that would have to be worked out by a good deal of work on the part of our accountants.

Q. There wouldn't be any such lag as 45 days, would there?

A. No, I wouldn't think so.

Q. Can you give us a general idea of what the lag would be?

A. I am frank to say that this question of lag and [4629] trying to prove statistically how many days lag there is in this working capital defies me, I can't tell you.

Q. The lag would be considerably less than 45 days, wouldn't it?

A. The lag is something and it is less than 45 days in the case of purchased gas.

Q. And it is less than 15 days.

A. Then you have got the question of produced gas and there is a different lag altogether there when we pay for that. It is just one of those things, one of those questions which to me, at least,—and maybe it is because I am a poor mathematician,—just defies statistical analysis. I just can't tell you.

Q. You have a good idea it is less than 45 days?

A. I have testified it is less than 45 days in the case of purchased gas, yes; there is no doubt about that.

Q. And in the case of purchased gas it is less than 10 days, isn't it?

A. No, I wouldn't say that.

Q. What is your best judgment?

A. I can't give you a judgment. I can't reduce that thing to mathematics. If I could I would. I am not trying

to evade it. I simply say it is one of those things that defies careful analysis on my part. I have spent a lot of time on that in trying to arrive at a satisfactory answer. [fol. 4630] I know this, and I will testify sincerely to this, that the allowance that I have asked for for overall working capital purposes is not excessive in the light of our experience. If we start doing business on the first day of the month and operate for 45 days with \$470,000 here for working capital for operating expenses, I am certain that sometime between the first and the 45th day we would be out of cash, see?

Q. Well, you can't tell us why you are certain?

A. To that extent it would have to be a judgment factor. I just can't do it statistically.

[fol. 4631] Louis F. Sperry a witness, having been previously sworn, resumed the stand and testified further as follows:

Cross-Examination (Continued)

By Mr. Littman:

Q. Mr. Sperry, at the close of this morning's session, we were discussing the matter of the date of payment by Panhandle Eastern for gas purchased and the date of receipt by Panhandle Eastern of gas revenues.

I would like to make certain that I understand your testimony on this subject thus far. Is my understanding correct that the gas vendors are paid on the 22nd day of the month?

A. Twentieth of the month.

Q. And their meters are read on what date?

A. Twenty-second or 23rd of the preceding month.

Q. Now, the gas revenues are received on what day of the month?

A. The majority percentage is paid for between the 23rd and the 26th of the month following delivery. There are other sales with payments on other days, but the pre-

ponderant amount comes within the four days I have mentioned, within the 23rd and the 26th.

Q. Now, the largest single customer of Panhandle Eastern is the Michigan Consolidated, is it not?

A. That is right.

Q. Michigan Consolidated Gas Company?

A. That is right.

Q. Which serves the City of Detroit?

A. Yes.

Q. Will you give us the 1940 revenues received from that company?

A. Approximately \$5,700,000.

Q. That is for the year 1940?

A. Yes.

Q. On what date does Panhandle Eastern receive the revenues from Michigan Consolidated Gas Company?

A. Usually about the 25th of the month.

Q. As a matter of fact, doesn't Michigan Consolidated pay first to Michigan Gas Transmission Company?

A. They deposit in a special account for us in Detroit through the courtesy of Michigan Gas Transmission, yes. We delegate Michigan Gas to collect that account for us, and it is deposited in a special account for us in a Detroit bank.

Q. When is it actually paid by Michigan Consolidated?

A. It becomes good funds in Detroit usually on the 24th or 25th of the month. It becomes usable to us in [fol. 4633] New York or Kansas City a day or two later than that, but you might say, for the purpose of this argument, the 25th is a fair day to state.

Q. Now, in the light of your testimony thus far, I would like to go through two or three typical months for the purpose of ascertaining how these revenues are received and gas expense paid.

Would it be correct to say that you start receiving gas from vendors on the 22nd of the month?

A. We can start any day you want in the month.

Q. Let's start on January 22, for instance.

A. All right.

Q. And the meters of the gas vendors are read on February 22nd and February 23rd, a month later, is that right?

A. Yes.

Q. Now, the gas that has been purchased by Panhandle Eastern from its vendors and received from its vendors during the period January 22 to February 22 is paid for on March 26, is it not?

A. That is right.

Q. So that, all in all, there is a period of approximately 60 days between the date of first delivery and the date of payment, is that correct?

A. That is right.

Q. Now, with respect to gas revenues, the deliveries [fol. 4634] start on, let us say, January 1. Would that be correct?

A. No, you have to start on January 22, the same day that you started your gas sales. You start the same day that you started your gas purchase.

Q. Well, with respect to the gas that you sell during the month of January, during the calendar month—withdraw that—isn't it a fact that the gas revenues are paid by calendar months?

A. Yes.

Q. Now, taking the calendar month of January 1 to January 31, the revenues received from the gas sold in that month are received on February 23 to February 26?

A. That is right, but that is December gas.

Q. Which get paid on February 23 to 26. You are being paid for gas that you delivered in January, are you not?

A. Yes, 22 days before the date you assumed we started delivery.

Q. On the 23rd of February to the 26th of February; you receive the revenues for all the gas that you deliver in the calendar month of January?

A. That is right, which gas we took from the vendors in December, starting the cut-off date with December 22nd.

Q. Don't you deliver the January gas in January?

A. Sure.

Q. In other words, the gas that you deliver up in [fol. 4635] Detroit, for instance, during the month of January, was purchased from the vendors in the month of January, was it not?

A. Yes; it was purchased from them in January, but the meter was not read until January 22nd.

Q. That is right.

A. That is right, but we still have got to pay them for their December bill before we get any money for the January gas.

Now, if you are trying to establish lag here and that is what you are doing, apparently, you have got to start with the same cut-off date, both on gas purchased and on gas sold.

It is not fair to take the 22nd day of the month cut-off for gas purchased and January 1 for gas sold.

Q. Now that we have established the actual dates of payment to vendors and the actual dates of receipt of revenues, will you tell us how much lag there is based on those dates?

A. I told you this morning I cannot figure it. There is lag, but I cannot tell you how much, and I do not believe you can figure how much because of the difference in cut-off dates, you see.

Q. Didn't you mention a 55-day lag this morning?

A. Yes, between the beginning of service and the receipt of the check, from the beginning of service on the first of any month to the receipt of the check.

Q. That is a 55-day lag with respect to revenue, is it [fol. 4636] not?

A. It is a maximum of 55 days lag on one day's business.

Q. And you have already testified that the lag with respect to gas purchased is 60 days, is that right?

A. No. You quoted a specific example where there would be a 60-day or approximately a 56-day lag on a particular purchase of gas.

I do not think you can generalize on either one of those statements.

Q. Let me put it this way. 60 days elapsed between the day when you first buy gas and the day that you pay for it?

A. Sometimes, only when that day happens to be the 22nd day of the month.

Q. Well, that is a maximum, isn't it? It couldn't be more than 60 days?

A. No, that is right.

Q. That would be a maximum lag with respect to gas purchased, would it not?

A. Yes.

Q. The 60 days?

A. Yes.

Q. And the maximum lag that you could possibly have with respect to gas revenues is 55 days?

A. If you collected your bill on time, that is correct.

Q. And you do collect your bills on time?

[fol. 4637] A. Not always, sometimes we don't.

Mr. Lee: You do from Detroit?

The Witness: Yes, Detroit usually pays on time.

Mr. Lee: You are talking about Detroit?

The Witness: No, we are talking generally.

Mr. Lee: Usually it does. You do not know of any instance where it did not, do you?

The Witness: I think once or twice there have been a mutual arrangement to delay payment. It may be due to measurement difficulties. It has no reflection on Detroit credit. They pay promptly.

Mr. Lee: What I am getting at is, there is no lag so far as the Detroit payment to your company is concerned.

The Witness: Usually there is not. You mean there is no lag between the day it is due and the day we get it?

Mr. Lee: Correct.

The Witness: No, it is very seldom late, and sometimes it might be early, by mutual agreement. I have seen times when we asked for their check a day or two ahead of time because we needed the money.

By Mr. Littman:

Q. And they complied with your request?

A. I suppose they have, yes.

Q. This date of the 23rd to the 26th of the month, these dates are the ones on which you receive substantially all [fol. 4638] of your revenues, is that correct?

A. The 23rd to the 26th?

Q. Yes.

A. Yes, that is when the preponderant amount of our payments come in.

Q. Certainly by the 26th of the month, you receive more than enough money with which to pay all of your operating expenses, isn't that correct?

A. For what period?

Q. Well, for the month.

A. For what month?

Q. For any month, for the month in which the revenues are received.

A. Sometimes your expenses overlap. Sometimes they are not all for that particular month. — Understand, Mr. Littman, our 45-day period applies not alone to gas purchased, gas sales, but applies to other operating expenses, ordinary construction, taxes and other matters, and in order to get a fair estimate of average lag or average elapsed time during which the company has got to have something in its till to pay bills, you have got to analyze everyone of those things in detail scientifically.

Q. You did not do that?

A. No. I testified this morning that was a job for public accountants that would take weeks to do. However, I [fol. 4639] am just as much interested in this subject as you are, but I repeat it was impractical to do it.

It was difficult to do it and, in my opinion, it was unnecessary to do it, because our experience indicates that we have got to have so much cash in the till in order to pay our bills and, in spite of all of the planning you can do ahead of time, you have got to have working capital. You have got to have cash with which to pay bills.

Q. Well, of course, one way of getting that cash is to get your revenues before you make any payments for operating expense.

A. That would be grand.

Q. What would be grand?

A. That would be fine, if everybody would pay us in advance for gas, but they do not.

Q. That is what we are here trying to ascertain; whether or not you, as a matter of practice, do receive your revenues before the time that it is required that you pay your operating expenses.

A. Yes.

Q. Now, that is what I would like to know, and going back to our original train of thought, you have testified that a 60-day period is the maximum lag for gas expense.

A. Maximum possible, yes, if we pay our bills on time.

Q. And you do pay your bills on time?

[fol. 4640] A. And we do pay our bills on time.

Q. What is the maximum lag with respect to gas revenues? A. That we cannot control.

Q. Isn't it 55 days?

A. In most cases, our credits are good. The people who do business with us are responsible and, in most cases, they pay on time. In some cases they do not, and we are helpless.

Q. Those cases are minor?

A. They are not any considerable portion of our revenues.

Q. Now, excluding from present consideration for the moment those minor exceptions to which you have just alluded, the maximum lag period on the revenues is 55 days, is it not? A. Usually, yes, sir, in most cases.

Q. So that, taking the two maximum lag periods, the gas revenues are received five days before your gas expense?

A. No, not at all. That does not follow. One day's consumption of gas, the purchase of gas on our part, could take place five days after one day's revenue from the sale of gas.

Q. Is there anything to prevent your company from—

Mr. Lee: (Interposing) Mr. Littman, pardon me, but that condition would be taken care of because it would fall in the following maximum period, would it not?

The Witness: In other words, in the meantime we have [fol. 4641] got to pay for some more gas. If we collect from Detroit on the 25th for any gas that has been sold them, we have still got a bill coming in to pay for a month's gas before we get another check from Detroit.

If we get \$1,000,000 from Detroit today—

Mr. Lee: (Interposing) Not if you synchronize your maximum day for payment to the vendor with your maximum day for collection of revenue.

The Witness: Mr. Lee, that is why we have to have working capital, because you cannot synchronize the payment to the vendor and your collections. You have just got to have money to tide yourself over because your collections do not come on the same day that your expenditures do.

Mr. Lee: At the most though, under your statement, the condition could only exist from the initial month's take and selling?

The Witness: No, that is not so, Mr. Lee, because remember we are talking here, or have been talking today, only about one item of expense.

Mr. Lee: I am only talking about that.

The Witness: Namely, purchase of gas.

Now, we produce half our gas and the expenses of producing gas are constant, day by day, week by week, month by month. The lag period there is entirely different. All that Mr. Littman is exploring today is half our gas [fol. 4642] requirements and only that which is covered by purchase contracts.

Mr. Lee: But if, for the moment—and I don't want to break in on Mr. Littman, but while this is fresh in our minds I would like to get this point cleared up—let us confine ourselves to the Detroit market alone, which is 40 percent of your entire market, as I understand.

Isn't it an actual fact that, so far as gas purchased is concerned, take your own illustration, that you have the money for that from the local distribution company before you are called upon to pay for it?

The Witness: No, that is not so. I will tell you why.

No matter what date you take, we have got to pay for that gas or some gas before we get paid for some other.

Mr. Lee: Only after the first month. Only from the first month in the beginning.

The Witness: If it is possible to assume, which it isn't, if it is possible to assume that this company starts operating today, fresh and new, with all of the volume of business we have got on our books—

Mr. Lee: (Interposing) No, I mean a situation analogous to this, where I go to work for you for \$20 a week and you hold back my first week's wages, which is the custom in business practice, and you always owe me that money, but thereafter, I am always caught up and you are caught up with paying me.

It isn't a continuous performance, is it?

[fol 4643] The Witness: No, but this is what you are getting at, Mr. Lee. This is January 5th, today. I do not care what the relative dates are. The fact remains I have got to pay for a month's gas this month before I get any receipts from Detroit, and I have got to have the money in the till to do it. Do you see?

Mr. Lee: No, I do not.

The Witness: On the 20th day of this month, I have a bill coming in.

Mr. Lee: By the time you get that check through there and it clears back to your bank, you will have received a deposit in the Detroit bank on the 22nd.

The Witness: No, we do not kite checks. The fact remains I have got to pay for gas on the 20th, and I do not get the money from Detroit until the 25th.

Mr. Lee: You could get it on the 22nd. You could make a draft on the bank if you wanted to.

The Witness: No, I have the dates here for all last year on which I received those payments, and they average around the 24th or the 25th, and the funds are not good for use until the day following. That is Detroit money.

Mr. Lee: Why is there two days intervening when it is paid—

The Witness: (Interposing) It is the mechanics of collection.

[fol 4644] Mr. Lee: (Continuing) On the 22nd, it is there to your credit.

The Witness: I do not believe it is paid on the 22nd. It may be mailed on the 22nd.

Mr. Lee: I am assuming it is put right in the bank by the Detroit company.

The Witness: My records show we do not get it until the 24th or 25th, and then it is in Detroit. What that particular mechanics is that accounts for that one or two days, I do not know, but no matter how you stymie these dates around, you have got to have working capital in your till in order to pay your bills, and that is just a question of finding out what the first amount of that working capital is.

By Mr. Littman:

Q. How many days do you have to take—

A. (Interposing). I have asked for an average of 45 days.

Q. You have asked for that? A. Yes.

Q. But how much do you actually have to have, based upon the experience of this company?

A. Based upon the experience, my five years sitting on this till, I would object strenuously to starting today with less working capital than we have asked for as an allowance in order to get through the next 45-day period, week [fol. 4645] in, week out; month in, month out; year in and year out.

Q. That is your ultimate conclusion?

A. That is my conclusion.

Mr. Lee: That is the only factor you can give?

The Witness: I think I have supported this with my figures. I think I have shown you where I have got to have \$500,000 for operating expenses, another "X" hundred thousand dollars for material and supplies, and another "X" thousand dollars for pre-payments.

I have compiled these figures honestly and conservatively. I have not tried to put the best foot forward. I have tried to make it realistic.

I have taken an 18-months' period instead of a 6-months' period and I think it is a fair presentation.

By Mr. Littman:

Q. Is this 45-day period specifically required for the purpose of gas purchase expense?

A. Mr. Littman, the 45-day period which we request is a judgment factor which spreads not only to gas purchase. That is only one item, but it passes to wages, taxes, prepayments, materials and supplies and everything else.

Q. Let's look at this one item for the moment and confine ourselves to this one item. Will you answer my question, namely, is the 45-day period necessary for the purpose of gas purchase expense?

[fol. 4646] A. No. I testified this morning that the lag between gas purchase and gas sale was not 45 days and you asked me how much it was, and I told you it defied analysis. I cannot tell you.

I know it is not 45 days, but I know the aggregate amount of these cash payments which we have outlined here does aggregate around 45 days and I know it would not be safe for me to sit here on just that amount of money and be able to pay all my bills in the next 45 days without sometime or other running out of cash.

Q. Confining ourselves to gas purchase and gas revenues, according to your testimony, you state that you allow your customers a shorter credit period than is allowed to you by your vendors. Is that correct?

A. No, I do not recollect that.

Q. Isn't that your testimony?

A. What is that again?

Q. Don't you say you allow your customers a shorter credit than is allowed by you to your vendors?

Mr. Culton: When did he testify to that, Mr. Littman?

The Witness: I do not remember that.

Mr. Littman: The billing dates showed that.

Mr. Culton: You asked if he testified that.

Mr. Littman: Well, let him state if that is correct.

The Witness: We agree to pay our vendors on the 20th [fol. 4647] of the month for gas taken out up to the 22nd of the previous month.

Most of our sales contracts provide that our customers will pay us approximately 45 days after we begin the service to them.

By Mr. Littman:

Q. Now, which of those periods is the shorter, the revenues period or the expense period?

A. I would say the expense period was shorter—yes, certainly.

Q. How do you figure that?

A. Are you including in your question other items than just the gas purchased?

Q. No; I am just talking about gas purchased.

A. You are not talking about gas produced?

Q. I am talking about gas purchased, which is the amount you read to me in this morning's session, amounting to \$1,187,200 for the year 1940, and \$676,400 for the first six months of 1941. A. Yes.

Q. That is the figure I am referring to.

A. I misunderstood slightly. The period between the cut-off at the well, the day the meter is read to the time we pay for it is approximately 28 days.

Q. Which period—

[fol. 4648] A. (Interposing) That is the period we have to pay in. The period we collect from our customers is the period between the first of the month and the 25th of the next month, which is approximately 55 days.

[fol. 4649] Q. Well, suppose the period of receipt of revenues and payment for gas purchased were synonymous. Would you require any working capital on that account? A. Well, they are not.

Q. Let's suppose they were. Would you require any working capital on that account?

A. Yes, we would have to have working capital anyway.

Q. In other words, let's see if you correctly understand my proposition.

Suppose you collected the revenues for the gas sold during the preceding month and suppose you paid for gas purchased in the preceding month at the same time.

What, if any, amounts would you require for working capital in those circumstances?

A. We would require working capital for wages, taxes—

Q. (Interposing) I am talking about the amount required, if any, on account of gas purchase expense.

A. Well, Mr. Littman, I hardly know how to answer that question.

In the first place, it would be impossible for that to happen. We have got to have gas in our line before we can sell it. We have got to buy gas before we can sell it or produce it.

Q. You have a separate provision in here for line pack. Excluding from consideration the item of line pack, which is a separate item anyhow, my question is, suppose all of the gas that you sell during the month of January, we will say, is paid for on the 20th of February and your revenue derived from the sale of that particular gas is received on the 20th of February.

I am asking you what amount would be required, if any, for working capital in those circumstances.

A. And assuming that both bills are paid promptly in every case, is that right?

Q. Yes.

A. In other words, there is no credit risk, one way or another?

Q. And assuming that the amount of revenues is more than ample—

A. (Interposing) In that case, if that were possible physically and assuming there were no credit risks, in so far as it only pertains to the gas purchased itself, no other expense, there would be no requirement for working capital.

Q. All right. What is there to prevent your company from operating its business in just that way?

A. It is perfectly impractical to operate business in that way.

Q. Why?

A. In exactly the same way it would be impossible for you to get paid in advance for everything you do.

Q. You are not paying for gas in advance, are you?

A. No.

Q. You are paying for gas as long as 60 days after you receive it, are you not?

A. In some cases.

Q. That is the longest period. The shorter period is 30 days. There is at least 30 days—

A. (Interposing) 28 days. We pay for our gas somewhere between 28 and 58 days after we get it.

Q. And you receive your revenue—

A. (Interposing) You cannot tell me, nor can I tell you, how much we pay for between those periods. You cannot measure it, but somewhere between those periods, we pay for it.

Q. So you are not paying for gas in advance, are you?

A. We are going back to the same question, which I conceded sometime ago, namely, there is not a 45-day lag [fol. 4652] between the payment for gas and the receipt from the customer.

Q. It is considerably less than 45 days?

A. It is something less than 45 days. I do not know how much, and neither do you.

Q. Well, I will tell you, so far as we are concerned, there is a lag in favor of the company, but that is our opinion.

A. That is right.

* * *

By Mr. Littman:

Q. Is it your testimony that you cannot calculate a lag for purchases and sales where the sales do not precisely coincide?

A. I have testified that I have not been able to satisfactorily estimate the lag that takes place in our particular business to the extent of determining mathematically accurately, exactly how many days that lag is:

Q. Nor anywhere near accurately?

[fol. 4653] A. I cannot do it. Now, maybe somebody else can, but I cannot do it. I do know that I need approximately 45 days' money to run the business.

Q. Well, you feel that way about it?

A. Yes, sir, that is my judgment.

Q. But we are still very anxious to have you be specific and tell us why you need it.

A. I am not trying to obstruct you in that, Mr. Littman.

Q. I understand that. My purpose is to go into some details so that we can get the basis of it.

Now, we know, do we not, from your testimony thus far, that the detailed data we have at hand does not support your assumption as to gas purchase expense. We may agree on that?

A. I admit there is less than a 45-days' lag there.

Q. Just one other thing in this regard, which I would like to clear up before we go to the next subject.

Did you state in your testimony here a moment ago that it was possible to pay for gas in advance of receiving the revenue for it?

A. That it was possible to what?

Q. Withdraw that.

Was it your testimony, in answer, I believe, to one of Mr. Lee's questions, that the company paid for gas in advance of receiving the revenue for it?

[fol. 4654] A. Sure.

Q. Will you name the day, or any day of the month on which it is possible for Panhandle Eastern to pay for gas in advance of receiving the revenue for it?

A. We will pay for gas on the 20th of this month for gas purchased last month before the time when we have received pay from our customers this month for gas sold last month.

Mr. Goodman: Would you be specific about the dates?

The Witness: Yes. We get paid by Detroit on the 25th. On the 20th, we pay for purchased gas.

Mr. Goodman: Wait a minute, don't go so fast. You know there is more than that date involved in the picture you are talking about.

The Witness: No, that is predominantly the correct date.

Mr. Goodman: Just a minute, please. You have a reading on certain dates, a so-called cut-off period. Is that right?

The Witness: Yes.

Mr. Goodman: What is the date for that on sales? Without bothering to look it up, to me this is a simple

thing, and I want you to tell me wherein this question is wrong.

You pay and you charge for gas by the month. Consequently, the average period for the month of gas receipt and gas delivery is 15 days, isn't that right, in either case?

The Witness: Go on.

Mr. Goodman: That is the average, all right. In addition, in both instances, you have a period from the cut off to the day of payment, so that if you take the cut-off from the date of payment plus 15 days, you have the time lag in both cases, which may be compared. Isn't that right? Is there anything complicated about that?

The Witness: To me, it is.

Mr. Goodman: I see. All right.

I wish you would answer Mr. Littman's question by dates, rather than by general conclusions.

The Witness: Mr. Littman asked me if there was any day of any month where we pay for gas before we get paid for gas, and I say almost any day of any month prior to—

Mr. Goodman: (Interposing). Show that by reference to the cut-off period and the date of payment for sale of gas and for receipt of gas.

The Witness: Wait a minute. I am not answering that question. I am saying that we have to pay for gas this month to the extent "X" dollars on the 20th of the month, and we do not get paid by our customers until around the 25th of this month, so there is a period there of at least five days when we are using working capital—

Mr. Littman: (Interposing). Not more than five days, isn't that a more accurate answer?

The Witness: For about five days.

By Mr. Littman:

[fol. 4656] Q. Which is comparable with your 45-day lag?

A. Not at all. That is just one factor in the 45. My 45 spreads to the other expenses of operation, not alone purchased gas.

Q. I am, of course, speaking of purchased gas.

A. I cannot confine my remarks to that.

Q. Can you give us a specific example of any day in the month where you will have a lag greater than five days for the purchased gas expense?

A. I do not know.

Q. Name one. A. I do not know.

Q. Well, you have named one that had five days.

A. Yes.

Q. Can you name one that had six days?

A. No, I cannot name one offhand, either more or less than that period. That is about the characteristic period.

Q. That is the characteristic period, about five days?

A. But understand—

Q. (Interposing) Is that right?

A. (Continuing) But understand the gas in those two cases is for different periods of time, for different cut-off dates. That is why you just cannot generalize on it.

Q. Is it your testimony that five days is the characteristic period?

[fol. 4657] A. It is a characteristic period for that type of transaction, yes.

Q. You cannot give us any other day of the month on which your payment would be in advanced more than five days, can you, under any circumstances?

A. Let me think, I think I can. If we should stop selling a customer on the 31st of a month, we would still have to pay for gas on the 20th of the following month, and we get nothing from the customer. Is that right?

Mr. Littman: Will you read that answer back?

The Witness: Maybe that isn't correct.

Mr. Goodman: No, it is not.

The Witness: It is not.

Mr. Goodman: You would collect your check on the 20th of the month for the gas you deliver.

The Witness: I think that is right. I do not think that is a good case.

By Mr. Littman:

Q. Then you are unable to give us any example?

A. No, I think that is correct.

Q. Of greater than a five-day lag for payment of gas expense?

A. I wouldn't make it on such general terms.

Q. What will you say about it?

A. I say because there are different cut-off dates in [fol. 4658] volved here, which point you just cannot get around, no matter how you try.

Q. According to your testimony, would it be true, Mr. Sperry, that the greater the credit period you receive from your vendors, the more working capital you need?

Mr. Culton: If the Court please, this witness has not said he based his 45 days on the lag. He said it was a judgment figure from a credit standpoint, and all of this interrogation is on the assumption as if he had said there was a 45-day lag on this gas and that was the reason for it.

Mr. Littman: If your Honor please, this gas purchase expense constitutes 30 percent of his entire requirement for so-called normal/cash funds for operating expenses, and if he cannot sustain his 45-day lag on this item, then I say that he is probably in great error in arriving at his total allowance.

Mr. Culton: He has not based it on lag. He had based it on the judgment a man is not going to start business without cash on hand even though he may expect to sell his stock in trade for cash. He has not based it on lag.

Mr. Lee: I submit Mr. Culton made an objection and the question that is pending should either be allowed or disallowed before Mr. Culton makes an explanation of what he thinks it ought to be. It is a very important question that is pending.

Trial Examiner: It would not be very helpful to us at [fol. 4659] this stage of the proceedings to argue out these questions.

The Trial Examiner hasn't been convinced that the 45-day lag is applied to gas purchases and sales. It has been

made a component element of the general testimony of this witness that a 45-day lag is required, or is involved in financing.

Mr. Culton: He has not testified he based it on lag.

Trial Examiner: But the Trial Examiner has been unable to recall any testimony of this witness that a 45-day lag is required as to gas purchases and sales, and in contrast with that, the testimony is apparently now that a five-day lag is at least typical.

Mr. Culton: So far as lag is concerned of this item.

Trial Examiner: So far as gas purchases and sales are concerned.

Mr. Littman: Which constitutes 30 percent of the entire amount.

Trial Examiner: There again, we are getting into an argument. Referring to the testimony of Mr. Sperry and in fairness to him, he has repeated that the estimate of 45 days is a judgment figure.

When that is analyzed and applied only to gas purchases and sales, it is reduced to a five-day lag. Am I not correct?

Mr. Wheat: Not according to the witness' testimony, because the witness stated it could not be reduced to a mathematical lag period since the cut-off days differed. I [fol. 4660] am simply quoting from what the witness has said, and I think that should be added to the statement.

Trial Examiner: I think this cross-examination is proceeding properly and that we are interested in Mr. Sperry's analysis of the several elements which go to make this judgment figure of 45-day lag.

The Witness: By credit period, you mean what, Mr. Littman? Time elapsing between the reading of the meter and the time we have to pay them?

By Mr. Littman:

Q. Yes, or the time elapsing between the period when you get your gas.

A. I would say the credit period is the shorter.

Trial Examiner: There is one other business factor I do not think you have mentioned. You pay, of course, gas purchases by company checks?

The Witness: Yes.

Trial Examiner: And on what bank are they drawn?

[fol. 4661] The Witness: On a Kansas City bank.

Trial Examiner: How many vendors are settled with by check each month?

The Witness: There are a large number of checks.

Trial Examiner: Can you state what, on the average, is the period required for the collection of these checks and the return against the company?

The Witness: I suppose there is a two or three-day float there. Most of them go to Kansas and north Texas. There is probably a two or three-day floating period. There is probably a two or three-day floating period between the time we receive checks from the customers. Those would tend to wash.

Trial Examiner: They would tend to wash, except in the comparative size of the two?

The Witness: Yes.

Trial Examiner: The reason I brought that up was because sometime ago it was stated a credit was made at Detroit.

The Witness: Yes, that was for convenience, of course.

Trial Examiner: For the settlement of the Detroit account?

The Witness: that does not help us in our collection on a per diem basis. It simply makes it more convenient for all parties.

By Mr. Littman:

Q. Now, you have just testified in response to my last [fol. 4662] question that the shorter the credit period that you receive from your vendors—withdraw that—you just testified that the greater the credit period that you have

for the payment to your vendors, the less working capital you would need. Is that correct?

A. If I understood your question correctly, Mr. Littman, I simply meant this, that the sooner you have to pay for your gas, the more money you have to have to pay it with. That is, the longer you have to use that money before it is reimbursed from your customer.

Q. You understand the credit period to be the period between the date the meter is read and the date the payment is made?

A. I have never heard that referred to, but I understand what you mean, I think.

Q. What is the credit period, as I have defined it, for gas purchase expense? Is it not 30 days, approximately?

A. Yes.

Q. 28 days.

A. 28 days.

Q. And what is your credit period with respect to gas revenues?

A. Approximately 45 days.

Q. Aren't you wrong there? You read the meter on the first of the month, do you not?

[fol. 4663] A. Yes.

Q. And you get paid between the 23d and the 26th of that month, according to your testimony, do you not?

A. Yes, I would say that was around 25 days.

Q. Around 25 days, which is approximately the same credit period in both instances, is it not? A. Yes.

Q. I believe you have testified on several occasions that Panhandle Eastern pays its gas vendors on the 20th of the month. Is my understanding correct?

A. That is right.

Q. Now, isn't it a fact that, under Panhandle Eastern's contracts, that company does not have to pay for the gas which it purchases until 30 days after the reading of the meter?

A. I do not know. It is our custom to pay on the 20th.

Q. You have not made a study of the contracts for the purpose of making such determination, have you?

A. Not in this case, no.

I would be surprised if it would be other than that. We usually receive in both of our sales contracts and purchase

contracts the day of the month on which the bill is to be rendered and the day on which it is to be paid. It is usually spelled out in the contract.

Q. I just want to ask you one more question about these [fol. 4664] gas purchases.

I have made the statement from time to time on this record that the gas purchase expense represents approximately 30 percent of your entire allowance of \$470,000 for normal cash funds for operating expenses. Am I correct in that?

A. I have not figured it.

Q. Will you kindly compute it in percentage?

A. Well, in 1940, it constituted \$1,187,000 out of a total of \$5,150,000 gross expenditures. Now, wait a minute—

Trial Examiner: (Interposing) Take a few minutes, Mr. Sperry, if necessary, and compute the percentage that Mr. Littman has asked for. It will make the record more concise.

The Witness: All right.

Mr. Littman, I cannot give you that figure because you have asked me for gas purchase expense, and I have not that segregated from gas production expense. My gas expense is lumped here, including both gas purchased and gas production and our discussion to date has had to do entirely with gas purchased.

By Mr. Littman:

Q. Well, Mr. Sperry, isn't the figure which you gave me some time ago of \$1,187,200 for 1940 and \$676,400 for the first six months of 1941, the gas purchase expense?

A. No, that is gas expense, over-all gas expense.

Q. What do you mean by over-all gas expense?

[fol. 4665] A. There would probably be a considerable item there of production expense. We only buy half our gas. We produce about half of it.

Q. In other words, this amount of \$1,863,000—

A. (Interposing) That does not constitute gas purchase expense on gas purchase contracts, I am confident.

Mr. Chamberlain: Exhibit 57 shows that.

By Mr. Littman:

Q. Exhibit 57, Column M, Lines 9 and 14, I am sure, shows that—

A. (Interposing) Is that an earnings or cash item?

Q. This is Mr. Watkins' exhibit, entitled "Statement of Gas Purchased from April 1, 1932, to June 30, 1941."

Now, Line 7 shows for 1940 that the company expended \$1,090,106.83 for gas purchased and for the first six months of 1941, as shown in Line 14, Column M, the amount is \$602,157.66.

A. You see, these figures would not tie into my cash figures accurately, in the first place because there is a lag between the cash expenditure and the earnings expenditures and receipts.

Q. But aren't these two figures comparable?

A. I would say that they should be roughly comparable.

Q. Now, in view of Exhibit 57, what is your testimony with respect to the \$1,863,600 amount which you just discussed a minute ago? Does that, or does that not represent the cost of gas purchased?

A. No; you mean the figures in my schedule?

Q. Yes.

A. I would say that it is not. I would say that there is some production expense in there too.

Q. Wouldn't you say certainly that the very large bulk of it was gas purchase cost?

A. I would think so, yes.

Q. If the production system expenses are included in your \$1,863,000 figure, then you do not have them anywhere else, do you?

A. They might be, some of them.

Q. Are they in twice?

A. No, there would be no duplication.

Q. Can you tell me whether or not this \$1,863,000 figure included in your working papers for the 18-months' period prior to June 30, 1941, includes all production system expense or not?

A. I cannot tell you without getting those figures broken down in Kansas City.

Q. Your working papers do not show that?

A. No, I have taken these figures right off my cash sheet. From my standpoint, you see, it does not make any

difference. It is money that goes out, and it goes out every [fol. 4667] month. That is the only thing I am interested in. I think the preponderant amount of it is gas purchased.

Q. Gas purchase cost? A. Yes.

[fol. 4672] By Mr. Littman:

Q. Can't we agree that practically all of this amount of \$1,863,600 for the 18-months' period preceding June 30, 1941, does, in fact, represent gas purchase costs?

A. I think I admitted that about fifteen minutes ago, before this wrangle started.

Q. I believe you said the majority of the amount is?

A. I think the predominant part is, sure.

Q. Could we agree that practically all of it is, within \$100,000?

[fol. 4673] A. I do not see why not.

Q. That is our understanding, and in view of Mr. Watkins' figures, we won't be far from right if we say it was within \$100,000, would we?

A. Furthermore, in answer to the question which gave rise to this argument, that does constitute slightly in excess of the 30 percent of the total figure which we are talking about.

[fol. 4674] By Mr. Littman:

Q. Mr. Sperry, another item which you testified was included in your estimate of normal cash funds for operating expenses was the payment for wages. Is that correct?

A. That is right.

Q. Had you calculated the lag with respect to payments for wages? A. No.

Q. Do you have any idea what the actual lag is?

A. No, I know the dates at which wages were paid.

Q. Do you mind stating for the record the dates on which wages are paid by Panhandle Eastern Pipe Line Company. That is to say, the date of the month?

A. Field employees, other than supervisors, are paid for a fiscal week, beginning Friday morning to Thursday night. Employees, other than supervisors, are paid each Thursday morning to Wednesday night. Office and Field Department Supervisors are paid for the first half of the month on the 15th of the month, for the last half of the

month on the first of the following month. Officers and department heads are paid by the month on the last day of the month.

Q: Can you give us the breakdown as between those four classifications?

[fol. 4675] A: I haven't got them. I haven't broken them down at all.

Q: Do you have any idea which of those four classes constitutes the largest expense over a given month?

A: The weekly payroll constitutes our largest payroll as distinct from the semi-monthly and the monthly.

Q: Now, as to the weekly employees, what is the maximum lag that you would have for the employees that are paid by the week?

A: Well, they are paid immediately their week is finished. They work from Friday to Thursday night and are paid just as soon as the check can be prepared.

Q: Now, as for the first week of a given month—

A: (Interposing) They would be paid on the 7th of the month.

Q: They would be paid on the 7th of the month? //

A: If it happened to be the right day, yes.

Q: And the revenues for that month are derived by Panhandle Eastern during the next month, are they not, on or about the 23rd or 25th of the month? A: Yes.

Q: So that as to the one week, that is the first week of [fol. 4676] the month, you have a lag of how much?

A: Well, according to that way of figuring it, we would have about a 48-day lag.

Q: A 48-day lag? Well, isn't that generally the correct way of ascertaining lag?

A: As I say, I haven't explored it from that angle, Mr. Littman. My whole study here has been to determine the amounts of cash that have gone out of the company and to average those over a period of 18 months, which is certainly a fair period, a conservative period to average them, and then to simply say that from a judgment standpoint I feel that we would be in danger of either running out of money or of sacrificing our credit if we didn't have 45 days cash on hand.

Now, you see this is a perfect example of the approach I haven't made to this problem. This is one of the things that a detailed accountant's report might ascertain for us,

but it was impossible to obtain that,—impracticable to obtain that, so I haven't approached it from the standpoint of breaking each one of these down into days lag, as you are trying to do. My judgment is that we need 45 days cash in the business.

Q. Well, I am going through the component elements to see whether or not the facts justify your conclusion, Mr. Sperry.

[fol. 4677] A. Well, that is all right.

Q. And that is why I am taking this much time. Now, starting business on the first day of January of a given year, Panhandle Eastern pays its weekly employees at the end of the first week, does it not?

A. Yes.

Q. And does not collect the revenue derived—at least in part—from these services until approximately the 23rd to 25th of the succeeding month, is that right?

A. That is right.

Q. Am I correct in saying that, generally, the proper method of determining the lag with respect to that first week's wages is by counting the days from the 7th day down to the 23rd or 25th day of the succeeding month. Is that right? A. Yes.

Q. I believe you said that the lag for the first week would be about 48 days, is that right?

A. I would think so.

Q. Now, what would the lag be for the weekly employees for the second week's wages in January?

A. I would say seven days less than that.

Q. That would be 41 days.

[fol. 4678] Q. Now, with respect to the third week's wages, the lag would be 7 days less [then], 41?

A. Right.

Q. Or 34 days. Is that right? A. Right.

Q. And the lag would be 27 days for the fourth week's wages. Is that right? A. Right.

Q. And so on until you got down to the 25th day of the succeeding February. Is that correct?

A. That is right.

Q. So that your maximum lag is 48 days for the weekly employees. Is that correct? A. Right.

Q. Now, as to the employees who receive their wages on the first and 15th of the month; those employees will have rendered two week's services in January before they receive any remuneration, would they not? A. Right.

Q. And the lag for those employees would be a maximum of 41 days, is that right? A. Right.

Q. And, of course, successively less until we get down [fol. 4679] to the 20th of February? A. Right.

Q. Now, the monthly employees—and I believe you are one of those, are you not? A. Yes.

Q. The lag, for instance, on your salary check would be approximately 23 days, would it not? A. Yes.

Q. So that the average lag for payments of wages, which is one of the items included in your estimate for "Normal Cash Funds for Operating Expenses", is something less than 45 days which you assumed. Is that correct?

A. I would think it would be on that approach, yes.

Q. Now, another item that you have is called "Ordinary Maintenance." When are those ordinary maintenance expense paid? Can you give us any idea on that?

A. No, I don't think you can generalize on that. They are paid when they are incurred. We pay our bills at intervals, convenient intervals.

Q. Approximately 30-day intervals, would you say?

A. No, less than that, I think we pay in less than 10 days ordinarily, a week or ten days.

Q. A week or ten days after receipt of the bill?

A. Yes.

[fol. 4680] Q. Ordinarily, when are the bills rendered? The first of the month?

A. I don't think you can generalize on that. There are as many customs as there are people in business.

Q. Now, ordinary maintenance consists of labor and materials, does it not?

A. Yes, that is right.

Q. Now, is the labor which you include in the category of "Ordinary Maintenance" the same or different than that included in the item which you have called "Payment For Wages"?

A. It is all lumped in there together, all maintenance and all labor.

Q. Is this a different species of labor?

A. No, it would be the same. The labor would be included in the maintenance. You see, when we run our books, we divide labor into two categories, operating labor and maintenance labor, and they are so classified on our books. For purposes of this cash study, it is all lumped in together.

Q. Now, the labor incurred in connection with ordinary maintenance consists of laborers on Panhandle Eastern's payroll, does it not?

A. It consists for the most part of regular employees. [fol. 4681] Q. And they are weekly employees?

A. Once in a while there will be a few other employees that are hired for particular jobs and then are released, but the preponderant part of our labor cost every year is to regular employees and our regular employees do most of our maintenance work.

Q. And insofar as their pay is concerned, they would fall into the category of the weekly employees, would they not? A. Yes.

Q. And you have already discussed the approximate lag with respect to those employees, have you not?

A. Yes.

Q. Now, as to the materials used for maintenance, doesn't that consist largely of pipe, tubing, and well equipment and the like?

A. It embraces all of those items. I would say that pipe, as such, wouldn't constitute a large percentage of the total. I think that the average maintenance expenditure is mostly smaller stuff than pipe. We keep an inventory of pipe all the while.

Q. You don't pay cash, do you, for the materials used?

A. No; we pay as soon as the bill is rendered or immediately after a bill is rendered.

[fol. 4682] Q. And it takes some time for the bill to be rendered after the delivery of the materials, does it not?

A. There, again, you can't generalize. You go to a hardware store and buy—on small supplies you probably would pay cash for it, kept in the petty cash books. If you ordered from a factory it might be the first of the next month before you got your bill for it. There is just no universal rule of thumb on it.

Q. Well, in any event, some time elapses between the date when you receive the material and the date when you pay the bill?

A. On the average there would be a few days, anyway.

Q. Then you have an item called "Overheads." Can you tell us anything about the lag on payment of overheads?

A. Well no, not very much. Your overheads would be your rents and your gas and electric, and things of that kind. Constant expenses, and some of those are prepaid. To the extent they are prepaid, they would be taken out of this and put into prepayments for the purpose of this study. Some of them are paid after the services are rendered, like the gas bill, electric bill, telephone bill. You just can't generalize on those small items.

Q. Thus far, considering the items that we have discussed, I fail to find any that would justify the taking of a lag of 45 days. Can you name some that would—

[fol. 4683] A. (Interposing) I can't name any specifically. I am still of the opinion that 45 days cash requirement is not only necessary to maintain the credit of the corporation, but it would be dangerous to cut it below that.

I also would like to point out, Mr. Littman, that in my testimony I pointed out that no single 45-day period is exactly comparable to another 45-day period. There are many 45-day periods which would take a lot more cash than the average which we have requested here, just as there are 45-day periods which would require less cash, but a fair, satisfactory, minimum average would be the amount specified here, \$470,000, here it is.

Q. You can not, however, give us any detailed items of expense upon which you base that conclusion, can you?

A. I think you have to have experience in those matters to properly judge what the proper amount is, just the same as you do in your family budget. I couldn't come to you and say that a \$100 balance was all that was necessary for you to keep in your family exchequer in order to pay for the bills that come in, but if I had your income and expenses over a period of five years, I could pretty well know how much of a bank balance I would have to have in your place to pay those family bills when they came in.

The same thing is true of a corporation. You just have [fol. 4684] to sit on the lid and watch the money go out

and after a while you begin to get the feel of it. You begin to realize how much money you do have to have in order to keep your bills paid and your credit good.

Q. Well, I understand, Mr. Speery, that you have an opinion as to the amount of money that you would like to have as cash working capital, and, of course, you are entitled to your opinion on that subject, however, what I would like to know is whether or not, in your opinion, you feel that these amounts are justified from a standpoint of regulation and for rate making purposes?

A. Let me answer that in three ways: First, I do think it is the minimum amount that we could satisfactorily get along with.

Secondly, I point out to you that we customarily keep three and four times this amount, and have regularly over a period of years, and that we are uncomfortable if we don't have several times the amount that we ask for, for inclusion in the base rate.

Third, I would like to point out that there is another factor and that is, if you are down to your last dollar you haven't any credit and that you have got to have ample funds in your till at all times or you lose your credit.

Now, the study which I have made here and the figure [fol. 4685] at which I have arrived for these purposes of \$470,000 cash, in my opinion, is the minimum satisfactory amount. It is the absolute irreducible minimum under which I wouldn't dare go, and I wouldn't feel that I was able to take this company to the money market for funds unless I had much more than this in my till.

Q. Well, for corporate purposes you feel it would be advisable to have this amount and more?

A. It isn't a case of advisable; it is a case of necessity. How much confidence would you have in the ability of this corporation to carry out its contract and to carry on its business without any idea of expansion at all, if you found that we had less than 45 days requirements of cash in our books? You would think we were crazy if you saw a \$70,000,000 corporation with a \$20,000 bank balance. What would you think? You would know darn well we were one jump ahead of the sheriff, and, perhaps, not quite one.

Q. Well, Mr. Sperry, this amount that you provide, \$470,000 for so-called "Normal Cash Funds for Operating Expenses," was not based on any actual company experience with respect to the amounts required by that company. Is that right?

A. Yes, it was based upon the recited experience here over an 18-month period of actual expenditures for [fol. 4686] specified purposes and I have been careful to exclude from those items certain other items or certain items which are not, perhaps, properly includable for purely operating expenses, such as the taxes which are excluded here. In other words, the only purpose of this study was to indicate the minimum amount necessary for these particular purposes based on 18 months experience.

Q. Based on a 45-day lag?

A. No, based on 18 months experience to show what the average per diem expenditure of cash had been and, after arriving at the per diem expenditure, then using judgment only as a factor, we estimated that it wouldn't be satisfactory for us to have less than 45 days cash with which to do business.

Now, let's not confuse 45 days lag with 45 days cash requirements because they are not the same. We have talked about lag simply in an interpretative way on some of these figures, but the fact remains that what we are claiming here is enough cash to do 45 days average business month in and month out, and that is not too much to ask, in my opinion.

Q. But you have no details to support the 45-day lag period, have you?

A. I am not trying to support 45 days lag, I am saying that I think it would be unsafe for us to have less than 45 days cash on hand, which is a different matter.

[fol. 4687] Q. But you have no details to support the 45-day period?

A. I have told you that when we discuss lag, that I have not been able to scientifically and through a firm of accountants, ascertain that that is exactly the exact number of days, but I tell you, as treasurer of the corporation, that in my judgment it would be unsafe to have any less cash than that on hand.

Q. That is based on your general judgment?

A. Based on judgment, yes.

Q. And not on any specific data?

A. No, but it is in the light of the experience cited here.

Mr. Wheat: By "the experience cited here," you mean that shown on your exhibit?

The Witness: In my working papers, yes.

By Mr. Littman:

Q. Now, you have testified that you estimated the amount of cash working capital required for emergencies in the amount of \$100,000. Is that correct?

A. Yes.

Q. Now, will you name the emergencies that this amount of \$100,000 is supposed to cover?

A. I can give you some examples of that, yes. I have two of them in mind particularly.

[fol. 4688] In 1937—I think it was '37, it was soon after I came with the company—we had a line break in Texas. It was strictly an act of God. It couldn't be foreseen, it swept out a river crossing, and within 15 to 20 days it required an expenditure of cold cash on our part of very close to \$100,000.

Now, you will find no reference to that in our Earnings Statement. It didn't affect earnings at all. It never appeared in our Income Account, but it hit the till for the amount that was necessary to effect repairs and effect repairs quickly.

Now, it is a perfect example of the kind of emergency that can arise and if you don't have cash to meet it, you are just plain out of luck.

Now, I have also in mind such accidents as failure of collections. Supposing, Mr. Lee, that something happened to the Detroit Company that made them delay in their payment of their bill to us for a few days. It is hard to conceive of a thing happening that would delay very long because their credit is good and they pay on the button, but suppose there is an air raid on Detroit and the bank should close for four or five days. Where would we be sitting here without that check for eight or nine hundred thousand dollars?

[fol. 4691] By Mr. Littman:

Q. This \$100,000 line break that you spoke of a few minutes ago, Mr. Sperry, how were those repairs of the line break charged? On the line of the company?

A. No, I don't know. Probably construction work in progress, but I don't know. That, again, is an accounting matter.

Q. Well, do you know whether or not it was all charged to maintenance or repairs or whether it was charged, at least in part, to the depreciation reserve?

A. No, it might have been replacements; it might have been repairs; it might be improvements; it might be permanent property or it might simply be in anticipation of the collection of insurance, but the fact remains it requires \$100,000 or approximately that for a period of two or three months, and if we didn't have that money, we were embarrassed. We did have it.

Q. Well, do you know how many pipe lines were destroyed by this catastrophe?

A. No; I think a mile or two swept out, but I am not sure. It was a shallow river crossing and the pipe was not buried very deep, and a cloud burst came and swept [fol. 4692] away a good deal of line.

Q. Now, you know, as a matter of fact, do you not, Mr. Sperry, that the cost of replacing that line would be charged to the depreciation reserve?

A. I don't know where it was charged, that is my point. I only know it required cash.

Q. Well, wouldn't you want to know where it is charged before you make an allowance for such an emergency in working capital? A. No.

Q. That wouldn't make any difference to you?

A. No, Mr. Littman. I have indicated and have given you figures to support the minimum number of dollars that I think we can operate our company at, and that is around \$470,000. That is minimum.

Q. It is this \$100,000 item I am talking about?

A. Yes; now in addition to that, I think it is only business prudence and it is necessary for the credit standing of this corporation that we have a slight margin, usable margin, if you please, so that if additional expenditures

come about or if there is a period of 45 days when \$470,000 is inadequate, that we will have a little kitty to use, and for lack of a better figure I have set \$100,000.

Now, I can't prove to you whether \$50,000 is the right [fol. 4693] figure or \$200,000 is the right figure, but there should be a little margin of safety there.

Q. And you are not interested in what that \$100,000 is to be used for, whether it is to be used for capital replacements or otherwise, are you?

A. So long as it is a cash requirement that needs to be met immediately and which can not be immediately reimbursed, I am not interested. It is working capital that is required for the daily operation of the business to meet contingencies which are recurrent, but which cannot be adequately foreseen.

Q. Why do you have a depreciation reserve?

A. The depreciation reserve is a bookkeeping item, Mr. Littman.

Q. Yes, I understand that, but what is the purpose of it?

A. I suppose it is to charge-off your property over the life of the enterprise. It isn't to produce cash.

Q. Isn't that one way of providing cash to take care of some of these items?

A. Sometimes it operates automatically to produce cash but that isn't the purpose.

Q. Let me see if I understand your theory of working [fol. 4694] capital. Do you mean to say that it is your theory of working capital that every dollar of cash that a company has in its till is necessary working capital?

A. Not at all. My study wouldn't indicate that. I thought that, would it?

Q. Well, don't you know, Mr. Sperry, that any items of cash that are spent for purposes of capital replacements don't have any place whatever in a working capital allowance?

A. That may very well be, Mr. Littman. I am merely saying this that there are a certain number of dollars, which I believe are \$470,000, necessary to the day-in-day-out operation of this business without any provision at all for the unexpected contingency. While \$470,000 for that one purpose may be adequate, there should be a little

margin above that, for the contingencies and to make up for the uneven flow of cash, and that is the figure of \$100,000 which I am using.

Q. Isn't it a fact, Mr. Sperry, that in order for this \$100,000 cash for emergencies to be allowable in the rate base as working capital, it would necessarily have to be for the purpose of maintenance and repairs only. Isn't that correct?

A. Well it might be, it might be or to provide for the uneven flow of cash.

[fol. 4695] Q. For maintenance or repairs?

A. Operations.

Q. Not capital expenditures, is that correct?

A. All right, all right, yes.

Q. Well then, that being the fact, you cannot say that every dollar of the \$100,000 that was expended by your company for the catastrophe that occurred in Texas, to which you alluded a few minutes ago, was required to be maintained at all times in working capital?

A. No, but a part of it might.

Q. How much of it? A. I don't know.

Q. Well, certainly only that part of it which was required for maintenance and repairs?

A. Perhaps, and, perhaps that is \$50,000 or perhaps it is \$200,000, I don't know. I have taken as a judgment figure \$100,000. Now, that may be too high or it may be too low, but, in principle, I think that it is sound.

Q. Do you know of any instance where Panhandle Eastern Pipe Line Company has expended \$100,000 in cash for maintenance or repairs on an emergency?

A. No, but I know of a case where cash fluctuated from month to month by as much as \$182,000.

[fol. 4696] Q. What does that have to do with emergencies?

A. And that is for purely operating costs. That arises out of the nature of our business which is seasonal and it is one of the contingencies for which this \$100,000 is expected to provide.

Q. Mr. Sperry, am I correct in understanding that this \$100,000 that you have provided for emergencies is not confined to the cash required for maintenance and repairs?

A. No, I didn't say that. I say that it is to provide for emergencies and contingencies which cannot be adequately foreseen but which are going to happen from year to

year, and that among those contingencies are such things as line breaks which might involve additional expenditures for maintenance and other operating costs which could be paid for only out of this \$100,000 kitty.

Q. Well, have you provided enough in this estimate to take care of capital replacements?

A. No, we made no attempt to do that. This is for purely operating purposes.

Q. All right, such as maintenance and repairs, or what?

A. Or uneven flow of cash or for default in collections or for other contingencies.

Q. Well, your title "Cash for Emergencies" embraces [fol. 4697] a cushion to take care of an uneven flow in cash?

A. Yes, that is [an] contingency—an emergency, yes.

Q. You call that an emergency?

A. It might be.

Q. Then by "emergency" you are not referring entirely to such things as line breaks?

A. Not entirely physical, no. We have in this company, Mr. Littman, chiefly seven or eight customers. The default on the part of anyone of those customers in any one month, the delay in their paying us might give us a cash emergency. I don't say it is likely. Most of our customers are of good credit standing, but supposing through no fault of their own they should fail to pay us some month, without a reserve for a contingency of this kind, it might embarrass us.

Q. Do you know of any instance over the approximately 10 years of life of this company where any large customers failed to pay on time? A. Yes.

Q. When?

A. My recollection is that the Cities Service Gas Company in Kansas City, which is one of our large customers, didn't pay us this year for around five months' gas. Now, [fol. 4698] I have forgotten what that amount was, but it was a considerable amount. The reason was this: That their old contract with us had expired, a new one had, for certain reasons, not been negotiated, and until it was negotiated they withheld funds.

It was perfectly ethical on their part, but it deprived us from—I have forgotten—a good many thousand dollars of revenue that was due us.

That is a perfectly possible contingency, a perfectly possible emergency for which this cash should be available.

Q. Mr. Sperry, you are not testifying that the only cash that this company is ever going to have on hand is the amount that you are providing here for working capital?

A. No, I am talking about cash which we require for the day-to-day operation of the business.

[fol. 4699] Q. Well, you are going to have, at all times, large sums of cash on hand such as cash that is accumulated for the payment of taxes that are not paid until the year after, such taxes are incurred?

A. Not for purposes of this study.

Q. You are going to assume that the company is going to be "broke" except for the cash that you are providing here?

A. I am providing here for minimum amounts of working capital cash, without which I think the company would be in danger of losing its credit.

Q. Do you provide a reserve for bad debts and operating expenses? A. No.

Q. I believe if you will check that, I think you will find—

A. (Interposing) We have a reserve in the Income Account but it isn't represented in cash. There is no cash in any figure here.

Q. Now, will you name or describe an emergency—I am speaking now of a physical emergency—that would require the outlay of \$100,000 of cash for maintenance or repairs? A. I can't do that.

[fol. 4700] Q. It would have to be a pretty big sized one?

A. Yes, that is only one of the contingencies I have mentioned.

Q. Do you know that Mr. Biddison testified here that a pipe length less than 40 feet might constitute a repair or a charge to maintenance, and that a damage or replacement to more than 40 feet of pipe would constitute a replacement through charges to the depreciation reserve?

Mr. Wheat: You are speaking now of the accounting phase of replacing pipe, are you?

Mr. Littman: Yes.

The Witness: No, I am not familiar with what the line of demarcation is.

By Mr. Littman:

Q. You are not familiar with the Commission's System of Accounts with respect to how such items are charged?

A. No, I am not an accountant, Mr. Littman, I have nothing to do with the accounting for this company.

Q. You are not an engineer? A. No.

Q. Well, then, in so far as physical emergencies are concerned, you cannot describe or imagine one that would require anything like \$100,000 for maintenance or repairs can you?

[fol. 4701] A. Yes, I can imagine one, but I don't know that I can justify it.

Q. Well, let's have your imagination on that subject?

A. Well, I don't know, Mr. Littman, on physical matters to what extent \$100,000 would be used up, but certainly a company which does twelve or fourteen million dollars worth of business a year and which has assets of \$70,000,000 is subject to contingencies which can't be foreseen, and to meet which \$100,000 is a very modest sum, in my opinion.

Q. Well, do you agree that in so far as physical emergencies are concerned, you should not provide any amount in excess of that which should be charged to maintenance or repairs? A. Or operating expenses.

Q. Or operating expenses? A. Yes.

Q. In other words you agree that you should not make any provision here for capital replacements?

A. That was not in my mind at all.

Q. Now, if Mr. Biddison is correct in stating that any [fol. 4702] thing in excess of 40 feet of pipe would be from an accounting standpoint a replacement, you have to have quite an imagination to imagine the number of catastrophies that would occur to use up \$100,000 at one time?

A. Unless the physical happening increased your operating expenses materially.

Q. So that you cannot tell us how much of this \$100,000 is just for the purpose of leveling off the amount of cash

that you want on hand for smoothing out purposes and how much of it is for the actual physical emergencies, can you?

A. No, I can't tell you whether \$50,000 or \$200,000 is the right amount, or what part of the \$100,000 should be earmarked for this, that, or the other purpose.

Q. It is simply—

A. (Interposing) A judgment figure, completely.

Q. And you have no details to support it?

A. No, except the testimony I have just given.

Q. Are the extraordinary losses and serious accidents covered by this item of cash for emergencies, matters which are covered not fully by insurance?

A. They might or might not be covered by insurance, I would say. To the extent that they are physical, they might be. To the extent that they are not physical, they wouldn't be, of course.

[fol. 4703] Q. In other words, you can't tell us whether these extraordinary losses and serious accidents are those which are not fully covered by insurance?

A. No, as a matter of fact; I haven't included in my claim for working capital, Mr. Littman, articles of that nature and I might very well have done so. There are a number of things which I could have claimed as properly includible in working capital which I have left out and among them are deferred costs, pending insurance adjustments; for instance, I have made no claim for that item in my working capital study and yet it is probable that it is perfectly justifiable to be included.

I have not included, in my working capital study, advances to employees, deposits with agents or good-faith deposits, deferred legal expenses of a nature of retainers, all of which are items of expense of a corporation which might properly be included in a working capital basis, but those things are not in here and to the extent that they are not in here, you might earmark them against the \$100,000 kitty.

Q. Well, doesn't this \$100,000 allowance cover losses which could not have reasonably been foreseen and provided for?

A. You mean losses to physical plant?

Q. Yes. A. No.

[fol. 4704] Q. It does not?

A. No. That would be a capital expenditure, wouldn't it?

Q. Well, what do you say? A. I think it would.

Q. You think it would? A. Yes.

Q. Now, another amount that you have provided for in your cash working capital is \$200,000 for "Minimum Bank Balances". A. Yes.

Q. Now, that is all in addition to the \$100,000 item to which you alluded a few moments ago and in addition to the \$470,000 that we discussed this morning.

A. Yes. You will notice I said a minimum balance of \$200,000, not an average balance, a minimum balance. I base that figure of \$200,000, first, on my experience with the banks and their requirements for banking corporations of this kind and, secondly, upon a definite exploration of the subject which I made with Mr. Kemper, President of the Commerce Trust Company in Kansas City, which bank has our active account. We keep in that bank \$700,000 or \$800,000 or \$900,000 at all times. We check against them. In many cases we will draw 25,000 or 30,000 checks a year against them. Our activity is considerable.

Furthermore, we asked them for a good deal of credit [fol. 4705] information. We checked with them all of our credit risks every year, we checked with them all of our country bank balances every year. We bank with a lot of small country banks, petty checking accounts. Those have to be checked. They do a lot of work for us.

Now, I asked Mr. Kemper in a formal letter, and without discussing it with him orally, in the light of the activity which had taken place in our account in the past years what he figured we would have to keep in his bank in the way of a minimum bank balance to support the activity. I have had the following letter from him dated July 31.

Mr. Wheat: 1941?

The Witness: Yes.

"We are pleased to have your letter of July 29 in which you make inquiry as to the minimum gross balance your company should maintain with Commerce Trust Company in order to compensate us for the activity of your account.

"We have had our Analysis Department cast up your figures and it appears that on the basis of the activity in the last three months compared with past activity and with some allowance for additional business in the future that you should maintain with us a minimum balance of \$200,000 or more.

"Very truly yours, James M. Kemper."

I don't believe that that is at all out of line with what other banks would require. We carry balances in eight [fol. 4796] different banks, sizeable balances. We don't use them as much as we do the Commerce Trust Company, but were we to concentrate all of our funds in one bank and let that bank do all of the work, I don't feel that we could let our balance go below the \$200,000 and I think we should keep an average balance of substantially more than that in the account in order to compensate them for their activity.

By Mr. Littman:

Q. What balance did you have in your bank accounts at June 30, 1941?

A. I don't know, but at the present time we have got around \$4,000,000. I can look up the June 30 figure, if you wish it.

Q. As a matter of fact, I believe you testified that it amounted to \$7,446,000 as of June 1941. Is that correct?

A. Yes, that is correct.

Q. In other words, you haven't had any difficulty keeping considerable cash balances in your bank accounts, have you?

A. We have always carried large amounts of cash, because we feel that large amounts of cash are necessary in our business, much larger amounts than we have asked for an allowance on for working capital purposes.

Q. Now, I refer you to Mr. Watkins' Exhibit No. 49 which is the company's income statement, particularly to lines 10, 17 to 20, inclusive. Isn't it a fact that the company's income deductions for depreciation and taxes [fol. 4707] amount to well over \$4,000,000 annually?

A. For depreciation and what?

Q. And taxes.

A. Well, I haven't the exhibit before me.

(Whereupon, Exhibit No. 49 was furnished the witness.)

The Witness: In lines what?

Mr. Littman: Exhibit 49, line 10 and lines 17 to 20, inclusive.

Mr. Wheat: Mr. Littman, may I ask you, are you asking a question on the basis of any cash item and depreciation or was that included in your question?

Mr. Littman: I am merely asking him whether or not the company deducts from income the amount of approximately \$4,000,000 a year for depreciation and taxes.

Mr. Wheat: We will stipulate that whatever is shown on this exhibit is deducted.

By Mr. Littman:

Q. Do you know that?

A. Yes.

Q. It does amount to well over \$4,000,000 a year, doesn't it?

A. Apparently from these figures.

Q. Now, depreciation is a non-cash item of expense, is it not?

A. Not necessarily, no.

[fol. 4708] Q. Well, most of it is a non-cash item, isn't it?

A. Not necessarily. A good part of it might go for replacements immediately—

Q. Well, what is the fact?

A. (Continuing) in which case it is definitely a cash item.

Q. Well, certainly as to that part which is not expended in a given year there—

A. (Interposing) Let me say this: You can't depend on your depreciation being a non-cash item; ordinarily and sometimes it is.

Q. Do you know what the balances were in the depreciation reserve as of June 30, 1941.

A. Yes, around eight or nine million dollars.

Q. Certainly those deductions were not cash items to that extent over the life of the company.

A. No, that is right. The first few years of an enterprise like ours they are usually not cash items.

Q. We can agree that for the most part, certainly in the earlier years of the company, they are not cash items.

Is that right. A. That is right.

Q. Now, as regards taxes, particularly income taxes, those are not paid until the year following the year in which they are incurred. Is that correct?

[fol. 4709] A. In some cases, yes.

Q. How about Federal income tax?

A. That is right, there is a period there between the time they have accrued and the time they are paid.

Q. Well, a considerable period, is there not?

A. Yes.

Q. These two items are a source of funds amounting to approximately \$4,000,000 for the year, are they not?

A. Surely.

Q. And the single fact of the matter is, Mr. Sperry, that these two items alone provide a source of funds far in excess of the so-called necessary minimum cash balances. Is that correct?

A. Granted that that is so, I don't see that that is pertinent to our discussion. We are asking for an allowance of certain cash for working capital purposes, working capital purposes by which we mean funds necessary for the doing of day-to-day business. In that are around \$470,000 irreducible minimum for operating expenses, a \$100,000 kitty and we have added \$200,000 for the keeping of balances; whether they are available from other sources or not is immaterial. If that is a requirement that we must meet in order to keep in business in the customary way, then we should have allowance for it.

[fol. 4713] LOUIS F. SPERRY, a witness previously called and sworn, resumed the stand and testified further as follows:

Cross-Examination—Resumed.

By Mr. Littman:

Q. Mr. Sperry, on December 31, 1940, your company's balance sheet showed a liability for taxes accrued of \$2,333,000. Is that correct?

A. I have not that balance sheet here, but that sounds like it was correct. Have you got a balance sheet you can show me?

Q. I think we have. I hand you a copy of Exhibit 48.

A. Thank you.

Q. Which is the company's balance sheet submitted by Witness Watkins.

A. Taxes accrued of how much, Mr. Littman, please?

Q. \$2,333,000 as of December 31, 1940.

[Vol. 4714] A. Yes, that is correct.

Q. When is that sum payable to the Government?

A. To the extent that that is income or excess profits tax, it becomes payable during a period several months later than the December 31 date that you mentioned. I assume, without checking it, that a large part of that tax reserve is probably in the nature of income and excess profits tax accrual.

Q. When was that sum paid to Panhandle Eastern by the customers?

A. That item, Mr. Littman, is an accrual item and is deducted from time to time as an expense of doing business on our books, presumably out of the revenues which the customers pay us regularly during the calendar year.

Q. You mean month by month, do you not?

A. Yes.

Q. Throughout the year 1940, and some of it was accumulated in previous years, was it not?

A. Possibly, yes.

Q. So that even if no allowance whatever were made for cash working capital, your company would still have a large part of the \$2,333,000 in its till at all times, would it not?

A. I wouldn't say that it would have a large part at all times. It would have a portion of that accrued from month to month.

[Vol. 4715] Q. Well, your total allowance for cash working capital amounts to \$900,000, does it not, as shown by your Table III of Exhibit 74?

A. What is that, \$900,000?

Q. \$900,000 cash. I have reference to items 1 to 4, inclusive.

A. Item 4 is not a cash item. Items 1, 2, and 3 aggregate \$770,000, but item 4 is a prepayment item which is not a cash item—yes, sir, it is too.

Q. I assumed that was right.

A. Yes, surely, \$900,000.

Q. \$900,000—

A. That is right.

Q. (Continuing) —is the amount of cash that you estimate is required for cash working capital?

A. Yes, that is correct.

Q. There would certainly be, at least, that much cash on hand at all times in the till accumulated for income tax, would there not?

A. There is no assurance of that, no. In other words, there might be many times during the year when our total cash on hand might be substantially less than the accrued tax item.

Q. Well, do you mean less than \$900,000?

A. Yes, it might conceivably be. It has many times in the past. Our cash balance, many times in the past, has [fol. 4716] fallen far below \$900,000.

Q. Those were in the days when taxes were much lower?

A. Yes. They were in the days when the company was much less profitable than today, too.

Q. But that is not the fact today, of course?

A. That is not the fact today, but there is no reason for thinking that it might not recur.

Q. Well, what are the probabilities?

A. I would say that insofar as management can control it, that our cash at all times will much exceed \$900,000 and we will try to keep it there from the standpoint of maintaining our own credit.

Q. In other words, you would expect this condition that you have described to continue in the future and that you will at all times have at least \$900,000 cash on hand for the payment of taxes?

A. We attempt, as a management policy, to have not less than \$1,500,000 in cash at all times for purposes of maintaining credit.

Q. Now, you have made an allowance, as shown by item No. 5 on Table III of Exhibit 74, of \$635,000 for materials and supplies?

A. Yes.

Q. Am I correct in understanding that your Tables I and II show further details with respect to that item? [fol. 4747] A. Yes, that is correct.

Q. As a matter of fact, the details show the amount to be somewhat in excess of the round figure of \$635,000?

A. Yes.

Q. Namely, \$635,479.26?

A. That is correct.

Q. You testified on direct examination that the materials and supplies on hand at June 30, 1941, amounted to \$261,000, did you not?

A. Yes, sir.

Q. Is this amount reasonably representative of the materials and supplies which have currently been kept on hand by Panhandle Eastern Pipe Line Company and its affiliates over the past few years?

A. Without meaning to be exact, I should say that that was in line with what we usually have kept in the past.

Q. And reasonably representative?

A. I think so, yes.

Q. Do you know what the inventory of materials and supplies was at June 30, 1941?

A. I can give you that, I think.

Q. I believe Exhibit 48 would show that.

A. I have it in the official statement for Panhandle Eastern for June 30, 1941; materials and supplies aggregate in round figures around \$269,000.

[fol. 4718] Q. Exhibit 48, page 1, line 13, column "N", shows the amount to be \$268,861.80.

A. I would think that that was correct.

Q. Now, the inventory of materials and supplies at June 30, 1941, was the highest of the past seven years, was it not?

A. I believe it was.

Q. Exhibit 48, line 13 of page 1, shows that to be the fact. Do you want to see the exhibit?

A. No, I do not care to. I think that is correct, because by that time management had seen the necessity of adding materially to our inventory of parts, because it had foreseen the possibility of stringency, it had also observed the fact that we had had inadequate supplies in some departments previous to that, which at times embarrassed us so that we were already at that time accumulating heavier materials and supplies.

Q. At the end of 1940 the materials and supplies on hand amounted to \$212,314.42. Does that sound reasonable?

A. That sounds like a correct statement.

Q. And at the end of 1939 the amount on hand was \$159,321?

A. That sounds like a correct statement.

Q. And in 1938 the amount was \$165,267?

A. That sounds reasonable.

[fol. 4719] Q. In 1937 the amount was much greater, namely, \$257,963. Does that sound right to you?

A. That sounds correct.

Q. I am reading from Exhibit 48, line 13. At any rate, you have taken the sum of \$268,861 as of June 30, 1941, which is the highest amount of materials and supplies that has been on hand in the past seven years, and used that as the starting figure, did you not? A. Yes.

Q. And you added a considerable amount to that figure to arrive at the total of \$635,000, is that correct?

A. Yes, a very considerable amount, a very considerable percentage.

Q. It amounts to better than twice—

A. (Interposing) Yes, it is over 200 per cent.

Q. And you have arrived at the additional amount by adding the estimates of materials and supplies that you expect will be required for a period in the future?

A. For the present and the immediate future.

Q. The details of which you gave in your direct testimony?

A. Yes, I think I gave details of it and it was worked out in great detail in my work sheets to which you have had access.

Q. Have you made a study and analysis of the materials [fol. 4720] and supplies actually issued during 1940 and 1941?

A. I wish you would clarify that just a little bit, if you will.

Q. Do you know how much in dollars of materials and supplies were issued in 1940 and 1941?

A. The words "were issued" puzzle me. I do not know quite what you mean.

Q. From the warehouses?

A. How much was taken out of warehouses and how much put in?

Q. Yes.

A. No, I have no record of that.

Q. Have you ever made a calculation of the average turnover of materials and supplies?

A. No, I have not made any such analysis.

Q. It is important to know that, isn't it?

A. Yes, and our operating men certainly would know it. Our operating men in Kansas City would have full cognizance of those facts.

Q. Do your working papers show that?

A. No; my working papers show three things: first, the amount of materials and supplies now warehoused plus amounts of additional materials and supplies which are or were, at the time of this report, already ordered.

Second, it shows those two categories plus additional [fol. 4721] amounts which our operating heads expected to put on order within a very short period, namely, three months from that approximate July 1 date; and, third, it shows those combined categories plus additional materials and supplies which our management expected and intended to put on order after a three-months date.

I classified it in that way so that our materials and supplies problem could be fairly and intelligently presented here for purposes of this hearing.

Q. Did you have any discussion with your operating men with respect to the average turnover of materials and supplies?

A. No, but I had extensive conversations with each department operating head as to the classification of these orders, the situation in which they found themselves as to immediate supplies, and the need for the additional supplies. I had our operating heads catalog in detail, item by item, what they had on hand, what they needed and when they needed it. All of those reports, Mr. Littman, were embodied in my working papers, to which you have had access in the last three months.

Q. And the total of \$635,000 is merely the addition of those figures?

A. That is correct.

Q. Without any deductions of any kind?

A. Without any deductions, that is correct.

[fol. 4722] Q. Of any kind?

A. In other words, I have not edited those figures, I have depended upon the department heads knowing what

they wanted and why they wanted it. The figures, however, have been edited and inspected and refined by the operating heads of our business, namely, Mr. Neuner, our vice-president, and Mr. Creveling, our president, so that they represent far more than just estimates. They are intelligent appraisals carefully checked as to our requirements.

Q. Well, now, the amount of materials and supplies on hand as of June 30, 1941, amounted to \$261,086, did it not?

A. And 61 cents, yes, sir.

Q. Suppose we omit the pennies.

And the amount of materials and supplies which were on order as of June 30, 1941, amounted to \$105,004. Is that right?

A. That is correct.

Q. Which gives the total that appears on Table II in line 1 of \$366,090. Is that right?

Mr. Wheat: You mean column 1?

Mr. Littman: Yes.

The Witness: Yes, that is correct.

By Mr. Littman:

Q. Now, the amount of materials and supplies in addition thereto, which it is expected will be ordered within 90 [fol. 4723] days after June 30, 1941, amounted to \$131,064, did it not? A. That is correct.

Q. You show merely the cumulative total in column 2 on Table II of Exhibit 74, do you not?

A. \$497,154.

Q. And to that amount you added the sum of \$138,275 of materials and supplies which you claim is expected to be ordered after the 90-day period. Is that right?

A. That is correct. I understand that amount to be \$138,145. Is that what you said?

Q. I said \$138,275, but it does not make a great deal of difference. I believe the correct arithmetic would be \$138,324. I think that would be more correct. Is that right?

A. That varies about \$200 from my figure here, but I think it is inconsequential.

Q. Giving the total that you have in column 3 of \$635,479.26? A. That is correct.

Q. And that total was arrived at by the pure addition of the figures you received from the various departments?

A. That is right.

Q. It is clear from your testimony, is it not, Mr. Sperry, that you did not deduct anything for future issues of materials and supplies?

A. There, again, I am a little bit vague as to what you mean by "future issues."

[fol. 4724] Now, you have testified that there were no deductions made from any of these amounts that were submitted to you by the department heads. Did you not?

A. Yes. In other words, these figures totaling \$635,000 would be the amount of materials and supplies as of July 1, or approximately July 1, 1941, with all of these supplies to be ordered, delivered, and on hand as of that date.

Q. Without any deductions?

A. Without any deductions. Naturally, Mr. Littman, if a valve is withdrawn from a warehouse to be put into the line and comes out of materials and supplies inventory, it would immediately be put on reorder and replaced just as soon as it was taken out.

Q. Well, you have all of the materials and supplies included in your total which were on hand at June 30, 1941, and which were on order for at least 90 days in advance of that time.

A. And more than 90 days.

Q. Approximately how far into the future?

A. My \$635,000 figure represents not only the materials on hand as of July 1 but the materials and supplies that we purposed to have on hand over several months following, all of which, however, constitute materials and supplies which we felt it would be desirable to have as of July 1, first, in the light of our reasonable expectancy of business.

Q. Well, now, you have a 90-day period that you mentioned a few minutes ago from June 30, 1941? A. Yes.

Q. And then you have orders to be made after the 90-day period? A. Yes.

Q. Now, what I would like to know is how far after the 90-day period does that extend.

A. I cannot give you that in days or weeks, but it was a period not long after the 90-day period, maybe an additional three or four months, two or three months. It was not, in other words, in the indefinite future. It was something that we contemplated doing as soon as we could turn ourselves to do it.

Q. Can we say, then, for all practical purposes it would be approximately six months from June 30, 1941?

A. Yes, not to exceed that.

Q. Yes. Then, this does not represent an average inventory, does it?

A. No, it represents the kind of inventory we would like as of today or as of three months ago.

Q. Of course, over a six months period there is a considerable amount of materials and supplies that are used up. [fol. 4726] Is that correct?

A. Yes, which materials and supplies would be immediately replaced. In other words, this represents the kind of a static inventory which we would like to maintain under present business conditions. We would not like to have to fall below the \$635,000 inventory once we reach it.

Q. Well, of course, materials and supplies that are on order are not paid for until received?

A. No, but what we are asking for here is an allowance of working capital sufficient to pay for them as soon as they can be delivered. The reasons why we have not got them in our warehouses now are physical reasons and we either need those inventories or the money with which to pay for those inventories as soon as they can be delivered.

Trial Examiner: You might explain what you mean by "physical reasons", Mr. Sperry.

The Witness: The reasons have to do, Mr. Examiner, with priority orders, with the difficulties that obtain in getting physical materials and supplies from fabricators. In other words, manufacturing and delivery difficulties.

Trial Examiner: Related to the fact that the country is at war?

The Witness: Yes.

By Mr. Littman:

Q. Did you ask the men who submitted the figures of [fol. 4727] amounts on order whether they actually needed and required those materials as of June 30, 1941?

A. Yes. I asked them to give me a list of the materials and supplies, first, that they had on hand, second, that they urgently needed and that they would feel that it was dangerous, in view of the circumstances, to be without. These are the compilations of their answers.

Q. Well, there is always a certain amount of materials and supplies that is ordered ahead of time. Is there not?

A. They are all ordered in anticipation of need, except when there is a sudden break. We try to keep an inventory of parts that have to be replaced and except in cases where we have a sudden and unanticipated need we keep spares available.

Q. I do not believe you answered my question directly.

A. I am sorry. Let me have the question again.

(The pending question, as above recorded, was read by the reporter.)

The Witness: The answer is yes.

By Mr. Littman:

Q. And you think it is proper to simply add six months of orders, total them up and get the proper amount of inventory for purposes of this proceeding?

A. No, that is not what we have done. Let me explain. Around June 30 one factor began to emerge in connection with our materials and supplies problem and that was that [fol. 4728] we were going to have very great and increased difficulty in promptly getting materials and supplies, first, due to the fact that manufacturing facilities were slowing up due to war requirements; second, due to priority machinery, and that led to a study of material and supply requirements which we ought to have made previously but which we had not made previously. That resulted in bringing the whole question of our stock of replacements into sharp focus.

When it came into sharp focus, meetings were held between the various department heads and the operating management and we came to the conclusion that our policy, our heretofore policy of materials and supplies, had been

a very inadequate one, that there had been times when we were embarrassed because we had kept so small a set of replacements on hand, that we had been niggardly, and very niggardly, in stocking materials and supplies.

That policy of undue economy, I think, had been a hang-over from the days when this company had inadequate working capital, when it did not have excess funds with which to properly stock its warehouses. That condition had been allowed to go on.

Q. When was that condition that you just described?

A. That condition prevailed in the years 1932 right through, maybe, 1937.

Q. How about 1931?

[fol. 4729] A. Well, undoubtedly then, but there probably wasn't as much need for materials and supplies at that time, because the property was in the course of construction.

Q. Well, they had more materials and supplies on hand, according to Exhibit 48, in 1931 and 1932 than in any other year subsequent thereto.

A. Well, maybe that was because it was in the course of construction, because the property was in the course of building at that time. I do not know about the classification, whether the parts were carried then in property or in materials and supplies. At any rate, the figures which we are talking about this morning are an outgrowth of two distinct facts which happened in June or July of this year, first, the fact that we were alarmed at being unable to get prompt deliveries, and, second, the fact that we did wake up to the fact that we did not have enough materials and supplies and had not had for several years.

Q. In other words, the first factor that you named was simply this: That the company recognized that materials and supplies would probably be difficult to secure in the future and that, in view of that circumstance, it would be wise to accumulate a goodly supply for the future?

A. Yes, that was one reason.

Q. Now, let's look at this amount of working capital at the end of the six months' period, namely, as of December [fol. 4730] 31, 1941. Now, assuming that all of the materials and supplies that were ordered by your various departments were received prior to December 31, 1941, would you

have any such amount of materials and supplies on hand as that which you estimate in the amount of \$635,000?

A. Yes. If the materials and supplies concerning which we have been talking had not only been ordered at this date but had been delivered and paid for, we would now have an item on our books of materials and supplies of approximately \$635,000.

Q. Well, do you mean to say that there have not been any materials and supplies used up in the last six months?

A. Yes, but to the extent they have been used up, they have been reordered again and replaced, so that the \$635,000 total would not be reduced.

Q. Well, have you checked into that?

A. Yes, I have, and I might say that the materials and supplies which I estimated would be on order within the next three months have all been ordered with the exception of those materials and supplies in that category for which we cannot get priority ratings, and that they are on their way to be delivered or else are delivered, and that a portion of the materials and supplies, which I estimated would be on order after September, are on order after September 1 and more are being ordered every day.

[fol. 4731] Q. You want a return in this rate case on materials that are on order and not yet received, do you not?

A. Yes, I want to have cash for the materials and supplies which we would have liked to have had and which we needed and which we should have had on June 30 in the present circumstances.

Q. And you want a return, also, on those materials that are on order that you know very well, due to priorities, will never be received?

A. No, I do not think we can adopt any such theory as that. I think we shall make strenuous efforts to get every bit of this stuff.

Q. But you know you are not going to be able to get all of it.

A. I think we are going to get a lot of it. Don't forget, Mr. Littman, that we are a defense industry and that the Government is cooperating with us to the utmost extent that it can to get these things. We have been beset with difficulties, but difficulties not on purpose on the part of the Government but difficulties arising out of red tape.

Q. Now, Mr. Sperry, your estimate was made as of June 30, 1941.

A. Approximately, yes.

Q. And six months since that time which was contemplated by your estimate have since expired?

[fol. 4732] A. Yes.

Q. And we now have some actual experience to look to and to compare with your estimate, have we not?

A. Yes.

Q. All right; now, what was the amount of materials and supplies on hand at June 30, 1941?

A. It is \$261,086.

Q. I meant December 31, 1941.

A. I do not know. We have not any figures for the year-end yet.

Mr. Culton: I call Commission counsel's attention to the fact that on page 64 of the document he has examined, Prospectus of Panhandle Eastern Pipe Line Company, the figures for September 30, 1941, are shown as being \$321,000.

By Mr. Littman:

Q. Is Mr. Culton's statement correct, Mr. Sperry?

A. I would have to look at your document to check it, Mr. Littman. What figure did you say?

Q. I think the document that you filed with the Securities and Exchange—

A. (Interposing) \$321,277.

Q. Is that the amount of materials and supplies on hand as of September 30, 1941? A. Yes.

Q. Now, that leaves only three months to go to get up [fol. 4733] to \$635,000?

A. Yes, sir, that is indicative of the very condition that we are worried about, that we won't be able to get deliveries as fast as we need them. That is why we are trying to be forehanded in accumulating materials and supplies to \$635,000.

Trial Examiner: Some reference has now been made to some document filed with the Securities and Exchange Commission. For the purpose of clarity I think perhaps it should be identified.

Mr. Culton: I shall refer to the document, Mr. Examiner, as the prospectus of the Panhandle Eastern Pipe

Line Company in connection with its proposed \$10,000,000 first mortgage and first lien bonds and 150,000 shares of cumulative preferred stock, which prospectus has recently been prepared by the Panhandle Eastern Pipe Line Company.

The Witness: I would like to have you mention that that is a red herring prospectus. Refer to the date because it isn't final.

Mr. Culton: The date being January blank, 1942.

The Witness: Draft number what?

Mr. Wheat: It is not on there.

The Witness: It is probably an original draft.

Mr. Wheat: It is clear that this has not yet been filed.

The Witness: It is not a final prospectus, that is why [fol. 4734] I want it read into the record that it is a red herring prospectus.

By Mr. Littman:

Q. Is the amount you refer to as working capital as of September 30 accurate? A. Yes.

Q. That is what we are referring to.

[fol. 4735] Q. I take it that the amount of \$635,479, estimated by you for materials and supplies, simply represents the amount that you think you would like to have on hand if you could get it?

A. That is the amount that, if we were absolutely free agents, we would have on hand today, that we would have had as of June 30 and that we will continue to have, based on our present expectancy of business. That is the approximate amount which we will continue to have in that particular inventory item from now on, as long as present conditions exist.

Q. You do not have it now?

A. No, we do not, but we either need that inventory or the money with which to purchase that inventory. That is why we are asking it as part of our rate base.

Q. It represents the amount which you would like to have?

A. It is the amount that we should have and that we are determined to have and will have just as soon as deliveries can be effected. It is the amount to which we are actually or potentially in the immediate future committed. In other words, it is the amount that we have on hand or on order, substantially, and which has got to be paid for.

[fol. 4736] Q. Do you at any time expect to have \$635,000 of materials and supplies actually on hand?

A. Yes, I hope to have them in the not too distant future.

Q. Yes.

A. Just as soon as the factories can deliver them to us.

Q. I am not talking about on order, I mean all at one time on hand. A. That is correct.

Q. \$635,000?

A. Yes, that is right. This is a \$70,000,000 property, Mr. Littman, and potentially a larger property than that, and on a \$70,000,000 basis, \$635,000 of replacement parts does not loom very large.

Q. Well, did you make the determination or the conclusion that you had to have \$635,000 worth of materials and supplies on hand?

A. No, sir, that was made by our operating organization, the men who were responsible for the operation of the property.

Q. They handed it to you and you accepted it?

A. They handed it to me, it was then put through two refining operations, both in general conference and in specific conference with Mr. Neuner, who was vice-president in charge of operations, and, again, with Mr. Creveling, [fol. 4737] who was president of the corporation. It was only after those refining processes that I used the figures.

Q. To what extent was the figure refined? Was it changed?

A. Yes, it was. I think this is a true statement: Our operating heads found that it was advisable to cut down in many cases some of the materials and supplies which the operating department heads felt they needed. The figures which emerged and which I have used represent a downward revision from the original figures as produced by the operating department heads.

Q. Well, the amount that they felt they needed was, of course, over a six-month period, was it not?

A. That was not the basis. The basis was what they needed at the present time in the light of all the circumstances.

Q. Mr. Sperry, how can you say that all of this was needed by them at one time when a substantial part of it was not to be ordered until after 90 days had elapsed?

A. I said in the light of the present circumstances, Mr. Littman.

Q. Well, now, who decided to conclude that it was all needed at one time, you or someone else?

A. I think my testimony is clear on that point. If we could have this \$635,000 item housed in our warehouse to [fol. 4738] day and paid for, that would be the ideal situation, and that is the situation which we would like to have.

Q. That who would like to have?

A. The operating management of Panhandle Eastern Pipe Line Company, the president, the vice-president, and the other operating heads.

Q. Well, how about the operating men from whom you secured your information in the first place? How do they feel about that?

A. They would like even more.

Q. Well, they certainly have not ordered \$183,000 worth of these materials and supplies. They had not even ordered those materials and supplies as of June 30, 1941, had they?

A. \$105,000 had been ordered at the time that I made this study. \$131,000, approximately, have been since ordered, and some part,—I don't know how much,—of \$138,000 in addition to that are already on order.

Q. Well, now, the \$138,000 was not ordered until 90 days had elapsed from June 30, 1941?

A. Yes, it takes time to do some of these things.

Q. And isn't that pretty good evidence that the men who waited 90 days before placing the orders didn't feel that they needed them immediately?

A. No, not at all. It takes time to shop around for [fol. 4739] these things and to specify them. We do not take the first catalog that appears on the desk and order carte blanche. We analyze the market, find where we can buy to the best advantage and put things on order. Furth-

ermore, some parts have to be engineered and specifications have to be drawn up, so that it takes time to put materials and supplies of this volume on order.

Q. Well, who told you that?

A. Why, I just know it, I don't believe anyone told me that.

Q. No one told you that, none of these operating men told you that, did they? A. Not that I know of.

Q. They didn't tell you why they weren't going to place the order until three months to six months had elapsed from June 30, 1941, did they?

A. No, I don't think they had to, Mr. Littman.

Q. And that wouldn't indicate to you at all, would it, that they didn't need that material immediately, you say?

A. No, I will stick to my original testimony, that the company felt and it still feels that it is desirable, that it is sound to have \$635,000 worth of this type of inventory in the light of all the present circumstances that face us and that we would like it in the warehouse now.

Q. You would like it in the rate base, too?

[fol. 4740] A. We want it in the rate base, because it has to be either in the warehouse or funds have to be available to pay for it.

Q. Can you testify, Mr. Sperry, of your own knowledge, that the operating men want all of these materials and supplies, or wanted them all as of June 30, 1941?

A. I can if I can believe the English language.

Q. Well, why do you wait?

A. It certainly was the approach that we took and, it was the testimony that these operating heads gave me, and you can see that that is all recited in quite some detail and worked out, item by item, carefully, in the work sheets to which you have had access.

Q. Well, why then did the operating men wait from three to six months before they even placed their orders, if you know of your own personal knowledge?

A. Because in some cases you just can't place orders sooner than that.

Q. Well, do you know the facts or are you testifying generally about what you generally think?

A. This is general knowledge.

Mr. Culton: I would suggest that Mr. Creveling identified all these and he is available for cross-examination as to the three-month period and the six-month period.

By Mr. Littman:

[fol. 4741] Q. Who decides in the first place what materials and supplies are needed? A. Who decides?

Q. Yes.

A. The operating management, Mr. Creveling and Mr. Neuner, will decide on policy. The operating department heads would requisition those materials and supplies as it appeared that they were desirable and those requisitions would be passed upon by the top men before the Purchasing Department got the order.

Q. Well, who places the order first?

A. The initiative on materials and supplies comes from the field men when they use up a part or when they see the need for a part.

[fol. 4742] That goes through the operating department head. It would go through D. K. Stephens of the pipe line department, George Koch of the compressor department, Sam Taylor of the automotive department and Mr. McEllhatten of the communications department.

They would then approve or disapprove of the need and would go to the operating head of the company, Mr. Neuner, and obtain his consent to the order of those substantial purchases.

Then the matter would be referred to the purchasing department, who would place the order after shopping around the market, so you see it is quite some machinery, and it takes time, and we pride ourselves that we do an expert job of purchasing after full investigation of what the market offers.

Q. And you don't know what was in the minds of the operating men that initiated these orders, do you?

A. All I can say is that they indicated the need. I have full confidence in their judgment on it.

Q. They indicated the need over a six-month period, did they not?

A. They indicated that that is what they would like.

Q. And they placed some orders immediately as you have set them forth, did they not?

A. Yes, and scheduled other orders for just as soon as the machine could function.

Q. And they told you that they weren't going to order [fol. 4743] \$131,000 worth of these materials and supplies until three months after June 30, 1941, is that correct?

Mr. Wheat: Mr. Littman, do you really mean what you said? That they weren't going to order it until three months? I read it that it was to be ordered within three months, and I wondered what you meant.

Mr. Littman: That is right.

Mr. Wheat: I am glad you corrected that.

By Mr. Littman:

Q. I will withdraw my question.

(Continuing) And it is a fact, is it not, Mr. Sperry, that the operating men at June 30, 1941, had not placed any order for the \$131,063 worth of materials and supplies, but stated that they would probably order them within the 90 days ensuing, is that correct?

A. They didn't say they probably would, they said that they would proceed to.

Q. Proceed to? A. Yes.

Q. From time to time throughout the 90 days, is that right?

A. And if you carefully went over the work sheets during the last three months, you will note that these lists of materials and supplies comprise literally thousands of different types and kinds of items, and that if each one [fol. 4744] of these were ordered through the ordinary purchasing department, it would take months simply to specify and put them on order.

Q. Well, the fact is, they didn't contemplate ordering them except during the 90 day period? I am speaking of \$131,000 worth.

A. We contemplated ordering them just as fast as the machinery could function. If they could all have been ordered on one day and properly specified and properly checked as to markets, that would have been done, but these things take time.

Q. Well, are you telling us what the operating men told you?

A. No, I am telling you what I believe to be the case.

Q. And the operating men in submitting their estimate to you advised you that they were not going to order \$138,000 worth of these materials and supplies until after 90 days had elapsed from June 30, 1941, is that correct?

A. That is right. In other words, there are different degrees of imminence here in the deliveries, but all the deliveries are contemplated.

Q. And after 90 days had elapsed from June 30, 1941, of course, there were certain materials and supplies that had been taken out, had there not?

A. Yes, which were, in turn, ordered for replacement.

Q. And used up?

A. Yes, which were, in turn, ordered for replacement in [fol. 4745] addition to these amounts.

Q. You would like to have a return on those, wouldn't you?

A. No, I would like to have a return on the aggregate of \$635,000.

Q. Although not on hand?

A. That is right out on order.

Q. Yes, and although not delivered?

A. That is correct.

Q. And although not on the shelves of your company?

A. That is correct, that is the provision that I want to have. I want either cash or the materials and supplies to that amount.

Q. In other words, you want \$105,000 worth of materials and supplies that have been on order, you want \$131,000 worth of materials and supplies that were to be ordered within 90 days from June 30, 1941, and you want \$138,324 of materials and supplies to be ordered after 90 days from January 30, 1941, a total of—

A. (Interposing) \$374,392.

Q. Now, is my statement correct?

A. That is correct.

Q. Now, you have included in your estimate the sum of \$34,000 for "line pack" shown in Table D of Exhibit 74, Item 6?

[fol. 4746] A. That is correct.

Q. Upon what theory are you claiming \$34,000 for line pack?

A. Mr. Littman, please don't try to get me in trouble on the technical aspects of line pack, because I am not an

engineer. I depend entirely upon the report of Mr. Burnham to whom I addressed the question, and whose working papers I think you still have, because they have never been returned to me.

The ordinary company has an inventory which is a legitimate part of working capital. It so happens that the inventory in the case of Panhandle Eastern Pipe Line Company is the gas in its line, which costs money to produce and which the company will never be able to sell because if the company goes out of business, that line pack will stay in the line and will not be marketed.

It, therefore, is an item of inventory, if you please, that has some value and you and I might quarrel considerably about what that value is, but it has some value, and we believe that we are entitled to include that value in our working capital, just as a merchandising company might include its inventory in its working capital.

Now, I don't profess to know what that gas is worth. We tried several formulas trying to set it up and establish it on a fair basis. We found a great deal of difference of [fol. 4747] opinion in our company as to what we should call the worth and I might add that the final figure which I used, which I use on my own responsibility, is a very much more conservative opinion than was recommended to me to be used by others in our company, because they thought the gas was worth more for this purpose than I did.

Q. Now many M. c. f.'s of gas did you use for purposes of this estimate?

A. As I say, I can't give you any information on that line pack unless you give me back my working papers.

Q. I am sorry. I thought you had received that.

A. No, you still have them. They were given to you supplemental to this package, they were prepared by Mr. Burnham and given to me in a separate package, and I have given them to you, and I have never had them back. I think I have a summary here of what I did. I may have my memorandum to Mr. Burnham and a summary of his reply. Let me just see if I have.

Q. Do you have the figure in your papers of—

A. (Interposing) \$34,000.

Q. Do you have a figure of \$841,578 M. c. f.'s—

A. (Interposing) Wait a minute, I will tell you what I do have. I have a resume of pipe line storage studies from March 1, 1941, to July 31, 1941, showing that we have in storage in our line a total of 956,830,000 cubic feet of [fol. 4748] 14.73 ounce gas.

Q. On Page 470 of the transcript, you testified that the line pack amounted to approximately 851,578 M. c. f.?

A. Yes.

Q. On a 16.4 pound pressure base? A. Yes.

Q. And that you calculated your allowance at the rate of 4 cents? A. At the well head.

Q. Per M. c. f. at the well head, making an inventory value of \$34,063, is that correct?

A. That is correct.

Q. And you rounded that sum off to \$34,000 for line pack? A. That is right.

Q. The thing I would like to know is whether this 851,578 M. c. f. of gas represents the total line pack for all the lines?

A. Yes, I think that that is the capacity of our system at any one given moment.

By Mr. Littman:

[fol. 4749] Q. Mr. Sperry, the amount of \$34,000 for line pack included in your estimate of working capital represents the value of the gas which is packed in all of Panhandle Eastern's lines, is that right?

A. That is my understanding.

Q. Do you know whether the plant accounts of the company contain \$70,108 for gas used in testing and packing the lines in the initial test in 1931?

A. No, I am not familiar with that.

Q. Well, do you know whether or not the company has capitalized on its books the value of gas used in testing and packing the lines?

A. I made some inquiries on that subject in the course of preparing my report on proposed working capital requirements. My recollection at the present is that some of the line pack was capitalized either in 1931 or in 1932 at a time, however, when our capacity was very small compared with the present, both because of the reduced

pressures at which we were then operating with relation to our present pressures and with relation also to the cubic capacity of the line, and I felt that, in making my appraisal here of \$34,000 which represents a 4-cent price on the present line pack, that I had more than enough compensated for any small capitalizing that might have been done there by taking such a low figure of value, and I am not at all [fol. 4750] sure that there was anything capitalized at that time.

Q. You would not call a figure such as \$70,108 which, according to our information, was capitalized for testing and packing the line in 1931, a small amount, would you?

A. I would say, without knowing that particular item, Mr. Littman, I would say that that particular expense to which you refer was probably for initially purging the line, cleaning it, when the line was originally built, in which case it is quite a different thing from the inventory line pack to which I have been referring.

The inventory line pack to which I am referring is the static amount of gas which is always in our line by reason of the fact that when you deliver gas you have got to put new gas in one end and take out at the other, and you have got to push the gas that is in the line through.

Q. Isn't that done in the purging operation?

A. No, purging is simply cleaning the line, blowing gas through and letting it come out at the other end into the open air, and cleaning out dust and particles of that kind.

Q. What do they then do?

A. That gas is gone.

Q. The gas that was used in purging is gone?

A. Yes.

Q. But the gas that immediately follows it?

[fol. 4751] A. That is part of this static amount of line pack.

Q. Yes.

A. But if you purge a line, you put some gas in one end and pull it out at the other, and it is gone out into the open air. That is an item of expense. That is not an inventory item at all. It does not affect the inventory.

Q. Now, referring to the amount of gas that immediately follows purging; the gas and which is left in the

lines immediately after the purging operation, did you inquire whether or not the value of that gas was capitalized as well as the value of the gas that went out into the air in the purging operation?

A. I made no inquiry at all about purging operations, because that is an item of expense that does not enter into this question at all.

I did make some inquiry as to whether any of the initial line pack which stayed in the line when it was originally built or up to the end of 1931, was capitalized, and my recollections are a little vague on the subject now, but I know that I did explore it and felt that the inclusion of this \$34,000 item was a perfectly safe and conservative amount to include in working capital, whether the relatively smaller amount of gas had been capitalized or not in earlier years.

Q. Can you give us the amount that you refer to as a small amount?

[fol. 4752] A. No, I cannot. As I say, my recollections on that point now are vague. I crossed the bridge, but I cannot give you the facts, as I found them, at this moment.

Q. Well, to the extent that the company has included in its plant accounts the value of gas used in packing the line, to that extent, at least, you have made a duplication; have you not?

A. If there is any amount in some other place in our proposed rate base which represents line pack, then it should not be duplicated here, but my recollection is I crossed that bridge rather adequately and found that there was not.

Q. When you made this working capital estimate, Mr. Sperry, you were making it primarily in conjunction with Mr. Biddison's reproduction cost estimate, were you not?

A. I checked with Mr. Biddison on every phase of my study after I had made it and had the accounting department and Mr. Biddison's men both check to see whether there was any duplication or overlapping between my base and his, and I found that there was no such duplication, and the accounting department so certified to me.

Q. There would not be any duplication, of course, where this amount that you estimated is added to a reproduction cost estimate, would there? There could not be

any duplication there, because Mr. Biddison does not have any such item in his reproduction cost-estimate, does he? [fol. 4753] A. I do not know. I am frank to say I cannot testify about Mr. Biddison's material.

Q. Well, your inquiry as to duplication, Mr. Sperry, was directed toward determining whether or not there was any duplication as between your estimate and Mr. Biddison's estimate, is that correct?

A. No, I will tell you how I approached it. These materials and supplies we have been working on, I made sure that I had nothing in materials and supplies that he may have had in property account.

Q. By "he", you mean whom?

A. Mr. Biddison might have in the property account, because in some cases, for instance, on lengths of pipe, we might be carrying some extra pipe as materials and supplies and some extra pipe as property account, and those matters I explored and made certain that there were no parts carried in materials and supplies which were carried in property account.

I also ascertained to my satisfaction that this line pack item which I was including in my working capital allowance was not provided for or duplicated in any of Mr. Biddison's base, so that while I cannot certify to you the details of that, I am quite sure of my ground.

Q. Do you mean—

A. (Interposing) I cannot tell you, for instance, what accounting might have taken place as regards line pack [fol. 4754] in the past, but I am certain that I am not wrongfully including it here.

Q. Now, if the Commission were to adopt an original cost or book cost rate base, it would be very important, would it not, to see that there is no duplication of line pack as between your estimate and the amount included for that purpose on the books of the company?

A. Yes, that, I would think, would be proper.

Q. And you are not sure whether there is or is not any duplication?

A. I have testified I do not believe there is, Mr. Littman, but I am also testifying that I cannot give you page and verse of how I explored that, or to what extent there may have been accounting entries in the past.

Q. In other words, you do not know of your own knowledge whether there is or is not a duplication?

A. I cannot swear here on the stand that some of the line pack has not been capitalized in the past. I do not know whether it has or not at this moment, but I remember carefully canvassing that at the time and feeling that it was perfectly proper for me to include this item here.

Q. Do you recall whether or not there was mentioned in connection with your canvass a figure of \$70,108 which appears in the plant accounts of the company for gas used in testing and packing the line?

[fol. 4755] A. No, I am quite sure that no such figure was ever discussed with me, and I also lean to the feeling that that probably is a purging operation and a matter of expense which is quite different from the line pack which finally emerged.

Q. I am talking about the item of \$70,108 which is charged to plant account. A. Yes.

Q. Not expense, Mr. Sperry.

A. That is right, but isn't that an item before 1932?

Q. It is an item that was incurred during construction in 1931, according to our information.

A. Haven't we heard somewhere in this case that a good deal of expense was capitalized in 1931 or 1932?

Mr. Culton: March 1932, I think the testimony shows, the company capitalized everything as of that date. It is the testimony of Mr. Watkins.

The Witness: If that were expense of purging the line at that time and was then capitalized, it would not bear upon the subsequent line pack at all, you see.

It would be a matter of expense that had been capitalized, not a matter of setting up a value for inventory.

By Mr. Littman:

Q. If the book figures of cost were to be used for a rate base for purposes of this proceeding, the cost of [fol. 4756] packing the lines should not be included there, and also included in your estimate, should it?

A. Unless the line pack is materially greater now than it was when the original line pack was capitalized. If we say 200 million cubic feet was capitalized in 1931 as the then capacity of the line and if now our capacity and our

line pack is \$851 million, then it would be perfectly proper to ask for an allowance now on the difference between the 200 million then capitalized and the 851 million now to be capitalized.

Q. On the difference, but not to make a duplication?

A. Yes.

Q. Now, Mr. Sperry, do you know what the company's practice has been with respect to charging the cost of packing the new lines and lines built subsequent to 1931?

A. No, I do not know that we have any practice of capitalizing them. I do not think we have. I do not think that it appears on our books as an item. I am not sure. I know that when we buy gas for our own use, that we charge ourselves with it at a very much higher rate than I have put in here.

Q. Isn't it a fact, Mr. Sperry, that the company's annual financial statements show a separate item of line pack in plant account?

A. I cannot answer that question at this moment.

Trial Examiner: May I ask, Mr. Littman, whether the [fol. 4757] System of Accounts indicates the propriety of the inclusion of this item as working capital? I think we have a question of some interest here as to whether such an item should be a part of capital or plant account, or a part of working capital.

Mr. Wheat: That is true, your Honor. Doubtless, it is a technical matter.

Trial Examiner: And it seems a good time to ascertain the views of counsel with reference to it.

Mr. Littman: I understand that our Uniform System of Accounts does not have a separate subject such as working capital. Working capital is made for rate making purposes from the balance sheet accounts by grouping a number of items such as materials and supplies and so forth, and so I believe that our System of Accounts is silent on that subject.

Mr. Wheat: I do want to say, Mr. Examiner, that in the Natural Gas Pipe Line Company of America case, the company's evidence on working capital did include a sum for packing gas in the line, and that this, as I understand

the decision, was accepted by the Commission for the purpose of its order in that proceeding.

Mr. Lee: Did or did not include?

Mr. Wheat: Did include it, yes, Mr. Lee.

I also understand that in the Canadian River Case which is now pending awaiting decision, Commission's counsel made a similar suggestion to that which Mr. Littman is [fol. 4758] now apparently suggesting to the witness, that if gas in the line had previously been capitalized, then it should not be separately and in a duplicate manner allowed as a part of working capital.

I would think, Mr. Examiner, that the exploration of whether this is in the account in any part, particularly in the item mentioned by Mr. Littman, would be a proper field of examination of Mr. Watkins.

It is obvious that Mr. Sperry is not informed in respect to this particular matter of the accounting for the original gas that went into the line. I am wondering whether that would not be the case.

Of course, it is also obvious, Mr. Examiner, that the capacity of the line has been so greatly increased since 1931, that any capitalization on any fair basis of line pack at that time would be obviously inadequate with respect to the present plant of the Panhandle Eastern Pipe Line Company.

Mr. Littman: Well, the point we are seeking to develop here, if your Honor please, does not deal with the propriety of including an amount in working capital or elsewhere in the rate base for line pack.

I wanted to make certain, however, that there be called to the attention of this witness and the company the situation that it is our understanding that the company has from time to time, not only in 1931 but subsequently thereto, capitalized on its books in the plant accounts the value of [fol. 4759] gas used for not only purging the line, but also packing, as well as purging the line.

Mr. Wheat: Mr. Littman, may I make this statement: We will stipulate on behalf of Panhandle Eastern Pipe

Line Company, there should be no duplication of such an item, and I will also state, Mr. Examiner, that we will endeavor to ascertain the fact in more detail than Mr. Sperry is now prepared to testify on this particular matter.

Mr. Littman: I understand that Mr. Sperry's estimate was primarily made for the purpose of going along with Mr. Biddison's reproduction cost estimate, in which event there would be no duplication but, inasmuch as the Trial Examiner has indicated that the rate base to be used in this case will be other than reproduction cost, we are, of course, very anxious that there be no duplication, and I can see that this witness is not familiar with the accounting practice and I, therefore, shall defer this line of inquiry.

Mr. Wheat: Irrespective, Mr. Examiner, of any potential rate base, we will undertake to develop the facts in this regard.

Trial Examiner: That, of course, is proper and the thought the Trial Examiner had in suggesting the question was to ascertain whether counsel are in agreement that the cost of, or investment in the packing of the line is properly included as an item of working capital.

[fol. 4760] Mr. Littman: If you Honor please, we are willing to agree that the item of line pack is a proper item to be included in the rate base for rate making purposes. A proper amount for line pack, of course, represents an investment that is frozen in the business and without which the business cannot operate and so, our line of inquiry was not at all directed toward the establishing that the item itself was improper, but it went rather to the matter of accounting duplication.

Have we made ourselves clear?

Trial Examiner: You are apparently then in agreement that this is properly under consideration as an item of working capital?

Mr. Littman: As an item of working capital or as an item of plant account.

Mr. Culton: May I suggest in this connection that the amount which you referred to as having been used in 1932 or spent in 1931 is not computed on a 4-cent basis.

That was at a time when the price of gas was much higher than 4 cents. I think your investigation clearly shows that they did not use the price which has here been used for that gas. Most of that gas was gas purchased at much higher prices.

Mr. Wheat: In any event, Mr. Littman, we will attempt to ascertain the fact in that regard and offer that.

Mr. Littman: I did want to make this clear to your [fol. 4761] Honor, that line pack may properly be a part of working capital, provided, however, that it is not included elsewhere in the plant accounts of the company and duplicated.

Mr. Wheat: We will stipulate to that.

Trial Examiner: This last statement brings you completely in accord as to the propriety of considering it as a part of working capital, leaving only the amount to be determined and one question which has just arisen in connection with the determination of the amount apparently is related to the pressure.

Mr. Culton: The pressure and the other element of capacity.

Mr. Wheat: And the price of the gas.

Trial Examiner: The pressure and also the price of the gas. I do not know to what extent that has been covered in the record, but I assume that the pressure which has been stated is in accordance with commercial custom and practice. If it is not so, I assume also it will come up in further examination.

Mr. Culton: For the Examiner's information, when the line was first constructed, there was very little pressure in it, and, naturally, very little gas.

For example, the gas ran from the Panhandle Field to the compressor station at Liberal under the well pressure, which shows that very little volumes of gas were being carried in the line at that time.

Later, as the pressures were stepped up and as the size of the pipe line increased, of course very great increases.

of volumes in gas necessary for line pack occurred, so that the line pack in 1931 and 1932 was a small percentage of the line pack which the company has at this time.

By Mr. Littman:

Q. Mr. Sperry, will you please turn to Table 4 of your Exhibit 74?

In that table, you show "Total Cash, Pre-Payments, and Materials and Supplies Actually Maintained by the Company at Certain dates in the Past."

These figures are shown from June 30, 1937, through June 30, 1941, at various dates.

Mr. Culton: And also December.

The Witness: At half-year intervals all the way through.

Mr. Littman: I see.

By Mr. Littman:

Q. Now, in your direct testimony, you referred to these amounts as "aggregate actual working capital."

What do you mean by that?

A. They represent the same items of working capital for which we have asked allowance in our tables. In other words, this table, No. 4, indicates that while we have asked for an allowance of \$1,569,000, I believe it is, for working [fol. 4763] capital allowance, in this rate base, that we have also kept at these periods specified, total cash, pre-payments, materials and supplies substantially in excess of those amounts which we have asked to have included in our present rate base.

Q. What conclusion do you wish to be drawn from that?

A. I wish to conclude that the allowances which we have requested are conservative; that they are low in proportion to what we have felt in the past we have actually needed for those purposes.

Q. Do you think it is proper to draw any such conclusion as that?

A. Yes.

Q. From these figures?

A. Yes, I do.

Q. Mr. Sperry, these huge sums that you show on Table 4 are simply the total of the company's cash on hand and materials and supplies on hand and pre-payments, are they not?

A. That is correct.

Q. And the bulk of these figures simply represent cash on hand, do they not?

A. The cash on hand is the largest item in these figures but, Mr. Littman, this is a good example of our deep conviction that in order to maintain the credit of this company and to keep our avenues of raising funds open, that [fol. 4764] especially in the light of the fact that we are dynamic and going, we need large sums of working capital on hand at all times and we have felt that it was necessary to leave large sums of working capital on hand at all times for that purpose.

Q. Now, these sums that you have shown in Table 4 are not working capital at all, are they, Mr. Sperry?

A. Yes, they constitute items of working capital.

Q. Do you know what the definition of actual net working capital is?

A. We have not been talking about net working capital. We have been talking about working capital for rate making purposes, working capital allowances.

Q. Do you suggest that these amounts you have in Table 4 have anything to do with working capital for rate making purposes?

A. They are exactly the same three items as constitute the bulk of our requests for allowance for working capital, in other words, simply the cash, pre-payments and materials and supplies.

They do not, for instance, include other items of working capital which we have on our books, such as accounts receivable which are not part of this case.

Q. Well, according to this table then, the more cash you have on hand, the more working capital you are entitled to, is that it?

[fol. 4765] A. Not at all, but I think this is a splendid example of how important the company thinks it is to have an adequate supply of cash and materials and supplies on hand and if we do not have such adequate amounts

of cash and materials and supplies on hand, we think our credit would suffer.

We think it would be impossible for us to render the service that the public is entitled to from our property.

Q. You have not made any deductions from these figures for current liabilities, have you?

A. No, sir, these items do not purport to be a complete list of all the items which appear on a company's current assets and current liabilities account.

They purport to be simply the total of the three items which constitute the bulk of the allowance which we have petitioned for inclusion in our rate base as working capital items.

Q. They are simply the total of current assets without the accounts receivable, aren't they? That is all they amount to?

A. They are an incomplete recital of both current assets and current liabilities, but they are an indication that we feel it is necessary to keep ourselves in a strong current position.

Q. Maybe it indicates that to you, Mr. Sperry, but isn't it a fact that men who work with figures such as these [fol. 4766] use the figure which is called "actual net working capital", do they not?

A. Yes, and that, of course, is a subject which we have not discussed at all in this hearing, have we?

Q. No, we have not, and if we are going to make any comparison between the amounts which you have suggested be allowed here, don't you think it would be proper or more proper, rather, to compare it with the actual net working capital, instead of the so-called aggregate actual working capital?

A. Well, let's not go beyond the point which I testified to, namely, that this is given simply as an indication of our feeling that it is necessary for us to keep ourselves in a strong liquid position.

Q. Can you tell us what actual net working capital means? What is actual net working capital?

A. What is what?

Q. Actual net working capital.

A. Current assets, minus current liabilities.

Q. And that is an accepted, recognized term and definition, isn't it?

A. I think that is conventional, yes.

Q. Will you determine the actual net working capital for 1940 from the company's balance sheet, Exhibit No. 48?

A. According to this classification which I assume is correct, total current and accrued assets of the company [fol. 4767] as of the end of 1940 were \$5,491,000 rounded out and the total current and accrued liabilities were \$3,171,000 rounded out.

Q. That leaves what amount?

A. That leaves about \$2,320,000 as net working capital.

Q. Now, the \$5,491,136 which you read into the record a moment ago as representing for the year 1940 the company's assets contains how much cash?

A. \$3,744,000.

Q. Now, what amount did you claim is required by way of cash working capital?

A. For purposes of what?

Q. Cash working capital.

A. For inclusion in a rate base?

Q. Yes.

A. We have made request, I think, for somewhat around \$900,000.

Q. \$900,000, that is right. That is our understanding of the total of the first four items on your Table 3.

A. Which we think is a very conservative request.

Q. Now, will you please substitute for me the \$900,000 in place of the \$3,744,000 of cash that the company actually had on hand at the end of the year 1940, and tell me what the actual net working capital would be on that basis?

A. I do not see that that is relevant at all.

Q. Whether it is relevant or not, would you mind tell [fol. 4768] ing me?

A. Perhaps you would like to make the subtraction. It is a matter of subtracting \$2,600,000 from the net working capital which I outlined a minute ago.

Q. Well, using your \$900,000 cash figure in place of the actual cash figure of the company for 1940 and making the calculation of actual net working capital on that basis, what would the result be?

A. The result, as I see it, would be a working capital deficit.

Q. It would be zero, wouldn't it?

A. It would be worse than that, it would be a deficit.

Q. It would be a minus or negative working capital, wouldn't it?

A. Yes, it would be a working capital deficit, we call it.

Q. In other words, your creditors supply you with working capital, do they not?

A. Not at all. That does not follow.

[fol. 4775] C. H. HINTON, resumed the stand, and testified further as follows:

Cross-Examination (Resumed).

By Mr. Littman:

Q. Mr. Hinton, did you prepare Exhibits Nos. 42 and 43 and the maps which have been identified as Exhibits 44, 45, and 46?

A. Yes, I prepared Exhibits 42 and 43, and did the preliminary work on the maps, but the rest of them were completed under my direction, that is the actual coloring of the maps.

Q. That is to say, all of these exhibits which I have just named were prepared by you or under your direction and supervision?

A. That is correct.

[fol. 4776] Q. Now, Exhibit 42 contains your written testimony from pages 4 to 41, inclusive, does it not?

A. Yes, sir.

Q. The present position which you occupy with Panhandle Eastern Pipeline Company is that of production engineer?

A. That is correct.

Q. You had arrived at a number of conclusions in your Exhibits Nos. 42 and 43. In order that the record may be clear and in order that I may have you express an opinion as to whether my understanding of these general conclusions is correct, I would like to take up several of them

and inquire whether my judgment or understanding of these conclusions is correct. One of these conclusions, as I gathered, is that capital expenditures on the production and gathering system south and west of Liberal compressor station in the aggregate amount of \$4,983,432 would be required over the next five and one-half years to the end of 1946 if Panhandle Eastern's load were not increased beyond the present annual demand. Is that correct?

A. That is correct to the extent that it is possible to prepare a correct estimate with the exception or with this to be included, that it is necessary to spend this amount to protect leases which will be lost to the company otherwise. [fol. 4777] Q. I gathered from your answer that generally my statement is a correct representation of one of your general conclusions?

A. Yes, sir.

Q. And am I correct, further, in gathering from your answer that not every dollar of this \$4,983,423 is necessarily for the purpose of producing what you have referred to as the basic load?

A. That is correct, Mr. Littman. If we did not have to protect some of our leases and guard against the losing of the leases, why, it would not be necessary to spend that amount of money to maintain the production level to supply our present market, for the market as of the mid-year 1941.

Q. Now, of course, we are speaking of the Panhandle field, are we not?

A. No, we are speaking of the Panhandle and the Hugoton field.

Q. That is right, we are speaking of the production system. Now, some of the wells, whose cost of drilling you include among the capital additions or capital expenditures, to which I have referred, are wells that are to be drilled, not for the purpose of immediately securing gas, but for the purpose of maintaining the leases. Is that right?

A. That is correct; however, if we did not drill some of the wells on the acreage which is now top leased by others, [fol. 4778] it would be necessary to make further expenditures in the Hugoton field of Kansas in order to meet our present load.

Q. Now, without going into details at this time,—we will probably go into greater detail later,—can you give us an idea of approximately how much of the \$4,983,423 of capital expenditures are required to be expended by reason of the maintenance of leases and such other matters as you have just mentioned as distinguished from those expenditures which must necessarily be made in your judgment for the purpose of securing the amount of gas contemplated to be produced for the basic load?

Do you understand my question?

A. I believe that I do, yes, sir.

That is approximately \$1,494,000; for the five and a half year period we could keep from spending that money, but ultimately we would have to spend that amount anyway, so it is just a matter of putting off that expenditure.

Q. To put it another way, you are going to expend the amount of—

A. \$1,494,000, or approximately.

Q. (Continuing) —in advance of actual need?

A. That is right.

Q. Now, the figure that you have just given includes, not only the wells, but also the gathering lines and other [fol. 4779] expenditures?

A. That is right, with the exception of the camp at Optima, Oklahoma. I did not include that in this figure here. I can.

Q. It would not be a very large amount, would it, Mr. Hinton?

A. No, it is small.

Q. Don't bother to give us an allocation.

Q. Now, another general principle or conclusion that I gathered from your exhibit is that capital expenditures on the production and gathering system south and west of Liberal compressor station in the aggregate amount of \$7,147,219 will be required over the next five and a half years to the end of 1946, in order to permit the company to deliver to its main pipe line the volumes of gas which Mr. Morton has estimated will be required during that same period, is that correct?

A. That is correct.

Q. Now, what part of the sum of \$7,147,219 represents expenditures not immediately required for that purpose?

A. By "not immediately", do you mean within this five and one-half year period?

Q. Yes, I mean within the five and one-half year period, for the purpose of producing the amounts of gas contemplated by your so-called anticipated load.

[fol. 4780] A. In the event that we have no valid proration in Hugoton field, Kansas, the amount will be very nearly the same as the \$7,147,219.

Q. Will you please explain what you mean by "valid proration"?

A. I mean this, that if the development of Panhandle Eastern Pipe Line Company in the Hugoton field, Kansas, is not curtailed by a proration order, we will spend approximately this amount of money. In the event that we did have valid proration, why it would exceed this in all probability.

Q. Who would issue this proration order?

A. The State Corporation Commission of Kansas.

Q. How would that proration order affect the situation, Mr. Hinton?

A. Well, in order to explain that, I will probably have to explain how proration works in the State of Kansas.

By Mr. Littman:

Q. Well, am I correct in understanding that the proration law of Kansas has a material-bearing upon your exhibits? A. Oh, yes.

Q. Then, it would be wise, I think, to have you explain your understanding of the proration situation.

A. In December, 1938, the State Corporation Commission placed an order upon Hugoton field, Kansas,—

Q. You are speaking of the State Corporation Commission of Kansas?

A. Yes, sir, I believe I said that, did I not?

(Continuing) —and under this order it was necessary that every operator in that field be developed so that their participation in the total production of the field was equal

to their total development, that is, if the development of each company—

It will probably be easier to give an example. If Panhandle Eastern had development which gave them a 50 per cent participation in the Hugoton field, then they were entitled to 50 per cent of the total production from that field.

Q. Over what period? Annual periods?

A. Those, at that time, were monthly. It has now been changed to six months. The reason that this proration order has a very far-reaching effect upon the capital expenditures declared by Panhandle Eastern is that other [fol. 4782] companies can set the pattern for the field, that is, if it takes ten wells of average size to give an allowable of 5,000,000 feet and this company that is taking 5,000,000 feet instead of having ten wells, has twenty wells, it means then that every other company that produces gas in that field must change their ratio of development to withdrawal to meet that twenty wells for 5,000,000 feet.

Q. Why, in order to avoid drainage?

A. No, it is just an order that everybody shall take from their wells the same amount, that is, for the same size well. Any producer that sets the pattern for that field can change the ratio of requirements there over a two or three months period, so that we might have to drill many more wells than we now have included in our plan.

If you will notice, we have very few wells in the Hugoton field, Kansas. Now, then, if that development shifts around in the Hugoton field so that a new pattern is set, why then we would have to drill wells that we don't contemplate drilling now to take the same amount of gas from Hugoton field, Kansas.

Q. In other words, a change in the proration would have the effect of increasing your capital expenditures?

A. Yes, sir, it could. I don't say that it would, but it readily could.

Q. And you have not made any estimate upon that [fol. 4783] contingency?

A. No, sir, that would be almost impossible to use on an estimating base and it has been ignored in this amount shown here.

Mr. Lee: Isn't the proration schedule under the law of Kansas a matter of litigation now?

The Witness: That is correct, it is.

Mr. Lee: And haven't some of the lower courts invalidated it?

The Witness: I am not sure about that, Mr. Lee.

Mr. Lee: Is it being enforced?

The Witness: No, sir.

Mr. Lee: So that all that you talk about is up in the air as far as enforcement is concerned, isn't it?

The Witness: It has just been before the District Court out there.

Mr. Lee: By injunction, wasn't it?

The Witness: And it is going back to the Commission for rehearing, or the State Supreme Court, and that will probably happen some time this month.

Mr. Lee: But the law that was passed,—you said in 1938?

The Witness: Yes, sir.

Mr. Lee: Has resulted in making it inoperative since 1938, hasn't it? That is the contest on the law?

[fol. 4784] The Witness: Well, it has been inoperative a great deal of the time, but there have been times in each period when it has been in effect.

Mr. Lee: But it hasn't been in effect in your own knowledge in the Hugoton field in Kansas. It would have to be practically in effect to be of any importance, because, isn't it true that litigation was started to enjoin the right from the time it became effective under the statute?

The Witness: That is correct, and it is now getting to the point that we are now likely to find out which way it might go within the next few months.

Mr. Lee: And if the Court invalidates it, then that matter of proration is out of the window until they pass another proration law, isn't it?

The Witness: I don't know how that works legally.

Mr. Lee: You know that the authority of the Commission in Kansas is predicated on that proration statute, don't you?

The Witness: Yes, sir, I do know that, but I don't know what effect any court decision might have on the future.

Mr. Lee: No, but I say the present law, if invalidated by the Supreme Court of Kansas will result in wiping out proration until some new statute is enacted and sustained, won't it?

The Witness: I believe that is the way it works, yes, sir.

[fol. 4786] By Mr. Littman:

Q. Well, Mr. Hinton, I gather from your testimony that excluding from consideration the proration situation, \$7,147,219 will all have to be expended in capital expenditures over the next five and a half years, to the end of 1946, in order to permit the company to deliver to its main pipe line the volume of gas which Mr. Morton has estimated will be required during that same period?

A. I believe that this figure is very nearly correct. There are two wells which might be kept out of this, but which would probably cost us a little bit more from an operating standpoint if we did not drill on it. I refer to the two locations on the Canadian River bed which is a State lease which does not expire.

Q. You might not have to drill those to secure this quantity of gas required for the anticipated load?

A. That is correct. That would be a matter of some \$40,000.

Q. Mr. Hinton, you testified at page 32 of your Exhibit 42, referring to this so-called anticipated load, that, "but we know that larger volumes of gas will be required and that such increases, in large part, will be beyond the control of the company. To serve present markets and the anticipated increases, capital expenditure of a more realistic

figure will be required. To serve the existing markets, as well as anticipated increases, the capital expenditures required will be at least the sum of \$7,147,219."

Is that correct?

A. As nearly as I am able to estimate, yes, sir.

[fol. 4788] Q. In other words, it is your testimony that the company will, in reality, be called upon to produce the amount of gas estimated by Mr. Morton, which you have referred to in your exhibit as the "anticipated load," is that correct?

A. Yes, sir.

Q. I take it, then, that the capital expenditures with respect to the so-called basic load, which does not contemplate any increases, are more or less of an academic question, are they not?

A. We used that, first, on our problem as a base and figured from that the increased cost.

Q. Based upon an assumption which you, in your own heart and mind, know will not be the situation in the next five and a half years?

A. To what assumption do you refer?

Q. Well, the assumption that I was referring to was the basic load. You know, don't you, that there will be no such thing as a basic load in the next five and a half years?

A. That has been proven for the period from June up to now, yes, sir. I don't know what it will be at the end of five and a half years, but I think that Mr. Morton's figures are going to be very close to what our load will reach.

[fol. 4789] Q. In other words, you are a disciple of Mr. Morton in that you are already making preparations to meet the increased demand which Mr. Morton has estimated will be made upon the system in the next five and a half years, is that correct?

A. Yes, sir.

Q. Now, another general conclusion that you reached was that the operation and maintenance expenses, which would be incurred in the Panhandle and Hugoton fields, in order to produce and deliver to the main pipe line at Liberal compressor station an amount of gas equivalent to the volumes now being produced over the next five and a

half years, would increase in those years in the total amounts shown in Schedule 3 of Exhibit 43. Is that a correct statement? A. Yes, sir.

Q. And am I correct in stating that a further conclusion that you reached is that operation and maintenance expenses, which will be incurred in the Panhandle and Hugoton fields in order to produce and deliver to the main pipe line at Liberal compressor station the volumes of gas which Mr. Morton has estimated will be needed to fulfill Panhandle Eastern's market requirements over the next five and one-half years are those expenses which are set forth in Schedule 4 of Exhibit 43?

A. Yes.

[fol. 4790] Q. Now, commencing on page 4 of your written testimony in Exhibit 42, near the bottom of the page you set forth a number of "principles and assumptions," which you followed in arriving at the conclusions in your exhibit and in making your studies. The first one which appears on page 4 reads as follows:

"1. Panhandle Eastern will, so long as economically advisable, continue to apportion its takes between the Panhandle field and the Hugoton field on approximately the present basis."

Is that one of the principles that you follow or assumptions that you follow?

A. That is correct, Mr. Littman.

Q. Now, I refer you to Schedule 5 of Exhibit 43, entitled, "Probable Production From Panhandle Eastern's Own Wells and Wells Under Gas Contract (Panhandle Field) During the Period July 1, 1940, to December 31, 1956."

Were the figures shown in Schedule 5 arrived at by a calculation involving the percentages discussed by you under the assumption No. 1, which I read a moment ago?

A. As long as it was economically possible.

[fol. 4791] Q. Do you understand my question?

A. Yes, I feel that I do. In other words, you want to know if I based that schedule on the application of the same percentages that we used in the year 1941 down through the years.

The answer is no, because it is not economical to do so. We did that as far as we could to give every lease owner, [fol. 4792] every producer as near the same benefit from their contract as possible, but only to the point where it did not cost Panhandle Eastern too much money to do so.

Q. How far through the years did you apply the percentages which are shown on page 5 of your written testimony?

A. Down to 1944. That is, they are approximate, they are within one per cent.

Q. In other words, if I understand you correctly, you apportioned the take as between the Panhandle field and the Hugoton field in almost the exact ratio as in the past for 1941, 1942, 1943, and 1944?

A. No, I said until 1944, but it, perhaps, might be well to go on from there. In the year 1944, in order to meet our peak requirement at Liberal, it was necessary to make further developments in the Hugoton field. In order to develop our leases in the Hugoton field to the point where we would be able to meet our peak requirement, it was necessary that we take slightly more gas from the Hugoton field for the year 1944, but as the load increased in 1945 we, again, went back to about the same percentage and that continued through the year 1945.

Q. Well, then, 1944 is an exception?

A. It was caused by having to develop to meet our anticipated peak load requirement at Liberal, inasmuch as [fol. 4793] we had to drill these extra wells, build the extra pipe line, why, we had to give these landowners somewhere about the same pull as we had been giving the others.

In 1944 our annual load from the Hugoton field was 22,568,683,000 cubic feet. From Texas we took 55 billion cubic feet. Our load increased—

Q. Are you speaking of the year 1942?

A. 1944 to explain—pardon me.

Q. I think you read a wrong figure.

A. I did, that should be 54 billion, instead of 55 billion.

Q. What was the figure for the Hugoton field?

A. I read the 1944 figure instead of the 1943 figure there.

In order to straighten this up and show what happened, perhaps it would be well to show what was taken for the year 1943 from each field.

Q. I think that would be a good idea.

A. The amount being 54 billion cubic feet from the Panhandle field of Texas, 19,051,408,000 cubic feet from the Hugoton field, making a total of 73,051,408,000 cubic feet. But in order to meet the anticipated peak load daily load for 1944, it was necessary to make some additional development in the Hugoton field and the total load increased to 77,568,683,000 cubic feet, and the increase from [fol. 4794] the Panhandle field of Texas was only one billion feet, so that changed the percentage up to 29.10, which was out of line from the split between the fields that we had been using.

Does that explain it all right, Mr. Littman?

Q. Yes, that explains the exception for the year 1944. Then, thereafter, did you go back to the same percentage of taking from the two fields?

A. To the year 1945 we did. At that time we had reached what we felt would be the maximum amount of gas that we could take from the Panhandle field of Texas with a reasonable investment. From the year 1945 on the load increases coming from the Hugoton field and that changes the percentage to a point where a greater per cent comes from the Hugoton field than had been taken from it in the years 1941 through 1945.

Q. What governs or fixes the take from the Panhandle field from 1946, and thereafter?

A. The capacity of the system and the ability of the wells to deliver gas at economic pressures.

Q. Both? A. Both.

Q. At the same time?

A. Yes. If we had a different system, it would probably be economical to produce wells at lower pressures, but it would not be a sound investment to install that type [fol. 4795] of system.

Q. Are you speaking now of the present system?

A. No, I am not. I am speaking of the system which has been revised or looped and is included in the capital expenditures shown in Schedule 2 of Exhibit 43.

Q. That is for the anticipated increased load?

A. Yes, sir.

Q. Then, is my understanding correct that Schedule 5 of Exhibit 43 is referable wholly to the anticipated future load?

A. I am sorry, I didn't get one word there. Is what?

Q. Is referable wholly to the anticipated increased load? A. Yes, that is right.

Q. This schedule No. 5, to which I just referred, could not be used in connection with the basic load, so-called?

A. No, sir.

[fol. 4800] Q. Your exhibits do not show the figures for the Hugoton Field which are comparable to those shown in Schedule 5 for the Panhandle Field which, of course, is for the anticipated future load?

A. That is correct.

Q. I would like to have you read into the record the comparable figures, Mr. Hinton, in the same detail as shown in Schedule 5 of Exhibit 42.

A. How do you want that, Mr. Littman? Do you want me to read those in, mention the year first and then the amount?

Q. I think, perhaps, the reporter might make a tabulation on one of the pages similar to that shown in Schedule 5 and then you could read across, that is, having one column "Period" and in the second column "The Panhandle Eastern Wells" and in the third column "Gas Purchased Wells".

Perhaps it might save time, Mr. Hinton, if you could furnish us with an exhibit showing the figures which I just requested and, also, showing the data for both fields under the basic load.

A. In other words, you just want the total that we expect to take from both fields, that is, the amount from each field under both the basic load and the anticipated load?

Q. Yes.

A. And that is not to be split between company wells and gas purchased wells?

Q. I would like to have it split as between the company wells and gas purchased wells, showing the same detail as you show here in Schedule 5.

A. That is going to be rather difficult to work out in the Hugoton field, because while we have it established in Kansas, we are not too familiar with what size well we are going to get either in Texas County, Oklahoma, or Sherman County, Hansford, and that will change the proportion between the produced gas, that is, the gas produced by Panhandle Eastern, and that purchased by Panhandle Eastern.

Do you understand what I mean?

[fol. 4802] The value of the well governs the division between purchased and produced gas.

Trial Examiner: In other words, you don't feel confident in estimates that you can make now based on advance history?

The Witness: Well, not down and through 1951, because there has been so little drilling down there, and especially in the Hansford County acreage. I could make one, but it would be a pure estimate.

[fol. 4803] By Mr. Littman:

Q. What factors governed the determination of the total withdrawals for each of the years 1941 to 1956 shown in Schedule 5 of Exhibit 43?

A. Acreage and potential. That is, the proration formula which is used in the Panhandle Field, Texas, governed the division of the loads shown on Schedule 5, Exhibit 43.

Q. Mr. Hinton, my question had reference to the total take from the Panhandle Field, which consists of the total of Columns B and C.

A. What governed the total?

[fol. 4804] Q. Yes, what factors governed your determination of the total withdrawals for each of the years shown in Schedule 5?

A. The division between the two fields of the total load based on the same division as was effective for 1941, with the exception of the year 1944, which was curtailed to some extent over what it might have been were it not for the fact that it was necessary to develop Hugoton Field to a greater extent in order to meet the peak day requirement in the Liberal station.

Q. Is my understanding correct, that you took the total requirement from both fields and simply applied a percentage for each of the years to secure the total take from the Panhandle Field except for the year 1944?

A. A near percentage, I would say, because we kept the take from the Panhandle Field in round numbers, and in order to do that, why, it fluctuated the percentage to a certain extent which was less than a total of one percent.

Q. Now, how far down through this schedule does that situation prevail?

A. Down to the year 1946.

Q. But that method was not used, namely, the percentage method, was not used after 1946?

A. That is correct.

[fol. 4805] Q. That is, my statement is correct? A. Yes.

Q. What method was used to arrive at the total take from the Panhandle Field represented by the totals of Columns B and C for the year 1947 down through 1956?

A. Horsepower and pipe line capacity.

Q. In other words, from 1947 down to 1956, you arrived at the total production for the Panhandle Field by assuming that you would take out all of the gas that you could take out with the gathering and transmission facilities on hand?

A. No, I would not say all that it would be possible to take out, because, as that load becomes smaller, in all probability the development of the field will be held back in the Hugoton Field and the amount of gas that will be taken from the Panhandle Field will be taken during the peak load months for two reasons, and that is that it will cost the company less money in the way of capital expenditures and the other is that when the pressure gets down to a lower point, it will not be economical to try to produce a gas well every day out of the year.

Q. Let's take each of the years, Mr. Hinton; and see if we cannot get a better understanding of your method.

* Now, what was the total estimated future load for the year 1942?

A. 68,101,459,000 cubic feet.

Q. You mean M. c. f.?

[fol. 4806] A. No, I said 68 billion. If it were M. c. f., it would be 68 million.

Q. I am sorry. Now, would you mind stating your figures in M. c. f. because they are so stated in Schedule 5 and it may be easier to follow?

A. I intended to ask you which way you would rather have me use those.

Q. I think M. c. f. would be much more convenient.

Now, you have determined that out of the 68,101,459 M. c. f. required to be produced to meet Mr. Morton's 1942 load, that you would take 50 million M. c. f. of the Panhandle Field and 18,101,459 M. c. f. from the Hugoton Field. Is that correct? A. That is correct.

Q. Now, what I am seeking to have you explain is, how did you arrive at the 50 million M. c. f. amount which, of course, represents the total of Columns B and C in Schedule 5 of Exhibit 43 for the year 1942?

A. The foundation for those figures for the two fields is based on our acquiring greatest percent of gas in place possible without curtailing production to the extent that we would be doing an injustice to the landowners on which the wells are located.

Q. Are you speaking of the Texas Panhandle Field?

A. I am speaking of both fields.

Q. How did you arrive at the division or apportionment [fol. 4807] of take between the two fields, that is, between the 50 million and the 18 million-odd M. c. f.?

A. By applying the development of our company showing how we would participate in each field in relationship to the total development in each field, and taking all possible from the acreage surrounded by the areas of greatest withdrawal by other companies and without cutting back the Hugoton Field production where the withdrawal is much, much lighter than it is in the Texas Field.

Q. Is the method by which you arrive at the apportionment of take as between these two fields shown in your working papers, Mr. Hinto?

A. No, sir, I do not believe it is. I mean, it would be very difficult to put this on paper. It is something that you just learn by being in contact with the two fields and knowing about what the rate of withdrawal is per acre from the areas in which the wells are located.

Q. Well, is it simply a judgment figure?

A. To some extent, it is a judgment figure, but it is influenced by what is actually happening.

Q. Is there any mathematical computation behind the apportionment?

A. To some extent, yes.

Q. To what extent?

A. To the extent that it is necessary to find out what [fol. 4808] the per-acre withdrawal is around the different wells owned by the company and trying to keep the withdrawal in proportion to what is happening around our leases as nearly as possible without cutting back the production from the landowners to a point where the company feels that it would not be fair.

Q. What was there to prevent you from concluding that you could have taken 40 million M. c. f. from the Panhandle Field in 1942, rather than 50 million in 1942?

A. Because 40 million from the Panhandle would not come in nearly protecting our reserve in the Panhandle as the 50 million will.

Q. What was there to prevent you from withdrawing 60 million from the Panhandle Field for the year 1942?

A. The fact that it is necessary to have sufficient development in the Hugoton Field to meet our four-months' winter requirements, and supply our peak day and if we had that development in the Hugoton Field, then it is necessary that we take some gas from each of those wells all through the year, and in order to give the landowners a fair share of the production, it was necessary to take that amount of gas from the Hugoton Field.

In other words, if we would take 60 million M. c. f. from the Panhandle Field, that would mean that we would only be taking approximately 8 million from 137 wells in the Hugoton Field, which would not be proportionate with [fol. 4809] the take of the wells surrounding our leases in that field.

Q. What was there to prevent you from taking 52 million M. c. f. from the Panhandle Field in 1942, rather than precisely 50 million?

A. Fifty million is a round figure, and if we would have taken 52 million based on our anticipation of market requirements for the year, it would mean that we would not be protecting our Kansas reserve inasmuch as the

withdrawal from the Hugoton Field will increase for that year.

Q. Well, in other words, if you had done what I suggested and had taken 52 million M. c. f. from the Panhandle Field in 1942, you would have had to take 16 million M. c. f. from the Hugoton Field and do you suggest that that could not be done?

A. That could be done, Mr. Littman, but I do not think it would be as good a business as it is to take it as the way we have it down here.

Now, you will remember that we have developed Oklahoma gas from 1941 to 1942 and the amount of gas that we are going to take from the same area of Hugoton Field will be approximately the same, but the increase in that amount comes from Texas County, Oklahoma, of the Hugoton Field.

Q. Now, under the basic load, your working papers show that 16 million M. c. f. would be taken from the Hugoton Field, is that correct?

[fol. 4810] A. That is correct, which means that we would not be able to protect our reserves and meet the withdrawal of the field and by not meeting the withdrawal, not taking approximately the same proportion from our acreage as is being taken from others, it means that our reserves would be diminished without our being able to get full benefit from them.

Q. You manage to do that under the basic load, do you not?

A. No, we do not, and under the basic load, the total recovery from our reserves would be much, much less than it will be by increasing our market.

Q. Now, was the method used for the year 1943 with respect to determining the total takes as between the two fields the same as that which you have described for the year 1942?

A. Hardly. It wasn't exactly the same. In other words, we will not take quite as much per acre from the Hugoton Field in 1943 as we have here for 1942.

Q. Why?

A. Due to the fact that we have a load increase that will have to be met from the Oklahoma acreage, and in order to supply the increase from the Oklahoma acreage, it is neces-

sary to drill more wells and by the amount of acreage which we will have by drilling from 1942 to 1943, it will [fol. 4811] mean that we will be taking somewhat less per acre in the Hugoton Field in 1943 than we did in 1942.

Q. This is kind of a trial and error method, is it not, Mr. Hinton? I am earnestly endeavoring to ascertain what you did.

A. Yes, I would say that it was more trial than error though, because when we get the answer, we do not feel we have the error left.

Q. I was not implying there was an error, necessarily, in your method. I was merely using a term that is used to express a cut and try method.

A. Yes, using an engineering term, of cut and fill.

Q. That is the type of method that you have used?

A. Yes, sir.

Q. And I presume that is the type of method you feel must be necessarily used?

A. It has to be watched down through the years. It is not possible to make a forecast this many years in advance and say that this is going to be exactly the right figure, because the withdrawal could change from the two fields very decidedly, and, of course, then we would not be protecting our reserve exactly as we would like to by using the same set of figures, but it is as good as I believe anyone could make at the present time.

Q. In other words, circumstances may arise which would [fol. 4812] substantially alter the proportion of take as between the two fields?

A. That is true. For instance, if the carbon black industry was moved to the Hugoton Field from the Texas Field, why, then I would say that we would probably have to take the volumes that we have set for the Panhandle Field down here from the Hugoton Field, and the volume we have set for the Hugoton Field from the Panhandle Field.

Q. Now, you have given us a description of the method used in 1944 for the purpose of arriving at the total amount to be taken from the Panhandle Field and the total amount to be taken from the Hugoton Field, have you not?

A. Yes, sir.

Q. Or did you want to elaborate on that?

A. Well, I am willing to go ahead and explain if there is anything that is not clear about it. I will be glad to answer the question.

Q. Is the method used in 1945 the same that was used in 1943 for the purpose of determining the take as between the two fields?

A. Yes, with this exception, that by the time we reach 1945, our withdrawal per acre from the Panhandle Field will be increased, but we feel justified in increasing that, due to the fact that we would have never, with the exception of possibly the past year, been able to protect our re-[fol. 4813] serve in the Panhandle Field in proper order, due to the fact that we did not have the market.

Q. In other words, it is advantageous, you feel, to take it out of the Panhandle Field as quickly as possible?

A. That is the economical way to get the gas from the Panhandle Field.

Q. Would you explain why it is best to do that from an economical standpoint?

A. The pressure decline in the Panhandle Field is becoming more pronounced each year, and the 60 billion feet of gas that we could get in 1946 will cost us less than that 60 billion that we get in 1948, due to the fact that we will have to have more wells on the line; we will have to probably have several individual compressors on the various wells.

Our ratio of compression will be different at the Sneed Station; more fuel will be required; more engine hours will be required to get that same amount of gas into and through the Sneed Station as the pressure declines in the field.

Q. What about drainage?

A. As long as we are taking at a rate that is comparable with the other producers in the area in which we operate, why, we are not going to suffer a great deal of drainage.

However, if we could take, say, if we had a reserve there of a trillion feet and if we could take that trillion feet all within the next ten years, it would be worth much more [fol. 4814] to us than if we have to take it over a period of 15 years.

In other words, if we were assigned a certain amount of gas, the shortest possible time that we could take that amount of gas out, why, the less it will cost us.

Q. I take it then, that one of the controlling considerations in the preparation of this Schedule 5 and this estimate is the element which you mentioned a moment ago, namely, that you are endeavoring to get this gas out of the Panhandle Field as quickly as possible, having in mind the market?

A. We are trying to take so that we do not lose any more of the reserve which we originally had in the Panhandle Field.

Q. Now, you have just completed your explanation of the method used for the year 1945, have you?

A. I believe that would apply pretty well to any year, Mr. Littman.

Q. Was the method that you used in 1946 to determine the 60 million M. c. f. withdrawal from the Panhandle Field any different from the methods used in the previous year?

A. Yes, to this extent, that in 1946 we anticipate a load which makes it necessary that we take a greater amount of gas from the field.

[fol. 4815] In other words, the percentage changes from between 26 and 27 percent to almost 35 percent from the Hugoton Field.

Q. Why?

A. Because at that time we will be taking a total amount of gas of 92,034,276 M. c. f. estimated, and we do not feel that we can economically develop in the Panhandle Field to take annual loads greater than 60 million feet and, for that reason, instead of going ahead and spending many thousands of dollars which would be necessary to take amounts in excess of 60 million feet, we are then changing our development up to the newer area in the Hugoton Field where we feel that we will get an ultimate recovery of much more gas for the same capital expenditure.

Q. Sixty million M. c. f. withdrawal from the Panhandle Field which is first reached in 1945 and continues

through 1948 is the largest withdrawal of any shown in your Schedule 5, is that correct? [—].

[A]. Do you use any different method in 1947 to determine the 60 million M. c. f. take from the Panhandle Field?

A. We feel that is all that our development will carry and at that time, as in 1946, we are working in an area of declining pressures and it would not, we feel, or I feel, be a good investment to go in there and put in additional horsepower in large number and larger pipe lines in order to get what extra amount that we could get over the 60 million M. c. f.

[fol. 4816]. Q. -What method did you use in 1948?

A. In 1948, the same.

Q. Now, looking at 1949, the total take from the Panhandle Field by Panhandle Eastern drops from 60 million M. c. f. to 55 million M. c. f.

How did you arrive at that figure?

A. The pipe line capacity, ratio of compression, the deliverability of the wells.

Q. You could not get any more gas out in that year?

A. That is a round figure and that can fluctuate either way. I feel it is very close to correct, but I do not mean to say that it will be exactly 55 million M. c. f.

Q. Now, does the method used for the year 1949 apply for the remaining years through 1956 shown in Schedule 5 of Exhibit 43?

A. Yes, it does.

Q. Mr. Hinton, a few moments ago, you made reference to production per acre. Do you have a certain standard production per acre that you seek to derive from the acreage in the Panhandle Field and from the Hugoton Field?

A. I do not believe I would call it a standard. It is that withdrawal per acre that is set by the total withdrawal from the entire field.

Did I make myself clear? In other words, if we had a [fol. 4817] thousand acres in a field and the take was 5 million a year from that field, see, that would mean that there would be 500 M. c. f. per acre, I believe, withdrawal and that is the way we take the entire field, find out what the total withdrawal from the entire field is and especially

around close to the areas in which we operate, and try to regulate our withdrawal so that we will suffer the least amount of migration of gas to outlying leases.

Q. You have named all of the factors that govern the determination of the total withdrawals as between the two fields, have you?

A. All I can think of, Mr. Littman. I believe they have all been covered.

Q. Now, referring back to your Principle 1 which appears at the bottom of Page 4 of your written testimony in which you state:

"Panhandle Eastern will, so long as economically advisable, continue to apportion its takes between the Panhandle Field and the Hugoton Field approximately on the present basis."

Isn't it apparent, Mr. Hinton, that that so-called principle or assumption did not have very much to do with the working out of your Schedule No. 5?

A. I would say that it had a great deal to do with it, on the contrary. If it were not for the fact we were trying to carry on the present practice, we would immediately [fol. 4818] have jumped up our withdrawal from the Panhandle Field by maybe 10 to 15 billion a year over what we have it here.

In other words, we would have paid no attention to the protection of the reserve in the Hugoton Field and the treatment of the landowners. We would immediately have gone down there to try to get the 40 or 50 billion feet of gas at a higher pressure which would have come at a less cost to the company, so I feel we have stuck to that very closely, and that it is governed by economics entirely.

Q. When did the economics cause the apportionment of take as between the Panhandle Field and the Hugoton Field to change from the approximately present basis?

A. I would say, the year 1946.

Q. And thereafter?

A. And thereafter.

Q. So that you have only four full years wherein the apportionment of take as between the Panhandle Field

[fol. 4819] and the Hugoton Field is approximately on the present basis? A. As long as economically possible.

Q. - Before I go to your second assumption, what is the present annual capacity of the main line from Sneed compressor station to Liberal station?

A. On the basis under which we have to operate with a load factor such as we have, it is now approximately 45 million M. c. f.

Q. And what is the maximum daily capacity?

A. We have recently reached 165 million of 8-ounce gas, that is 14.73 gas.

Mr. Culton: Roughly, what would that be on 16.4 divided by about 110?

The Witness: It would be about 149.

By Mr. Littman:

Q. What additional capacity will be provided on this main line running from Sneed compressor station to Liberal station by the capital additions which you estimate will be required under the future load?

A. There will be the installation of two 1300 horsepower units at Sneed making a total additional horsepower of 2600 horsepower; there will be two 650 units installed at the Hansford station, making a total addition of 1300 horsepower to that station; the line from the present Hansford station south will be looped with 22-inch [fol. 4820] pipe, a distance of about 32 miles; the present pipe line from Liberal station south will be looped for a distance of about 35 miles with 26-inch pipe.

The section of pipe from the intake side of Sneed station down to Windmill Junction, that is a point where the present 18 and 20 join into a single 20-inch line will be looped with 26-inch line a distance of 2.7 miles from Windmill Junction southwest to what is known as Zofness station.

That strip of present pipe line which is 20 inches in diameter will be looped with 22-inch pipe a distance of, as I remember, 8 miles and from Zofness station west, the present 12-inch line will be looped with 20-inch line and the present 16-inch line will be looped with 16-inch line.

Q. Now, what additional capacity will be provided on the line running from Sneed compressor station to Liberal

compressor station by reason of these capital additions which you mentioned?

A. I believe that is 220—I cannot find it right now. I have been working on several problems lately trying to get different volumes in there using the least amount of steel, and I have been changing these things around until that figure has slipped my mind, but I believe it is 220 million.

Q. 220,000 M.e.f. maximum daily capacity?

A. That is right.

Mr. Culton: Is that into Liberal or out of Sneed or both?

[fol. 4821] The Witness: It is into Liberal, out of Sneed.

By Mr. Littman:

Q. And what is the additional capacity which will be provided for that line by capital additions under the basic load?

A. Under the basic load, we can get by there for some time with the addition of extra horsepower, and I do not remember whether the pipe line enters into the 5½ year period or not.

It will eventually have to come to take care of the amount of gas we want from there.

Q. The capital additions are shown in your Exhibit 42 under the basic load from Pages 21 to 26?

A. Yes, that does have to occur under the basic load.

Q. You mean, you expect to loop the line between Sneed compressor and Liberal compressor stations?

A. We expect to loop from Liberal to Hansford, but not from Hansford to Sneed. The reason of the other loop is to pick up the Oklahoma gas in the future and at the same time utilize part of that capacity to be able to come into Liberal station at a more desirable intake pressure.

Q. Now, what will be the additional capacity provided by the capital expenditures under the basic load for this line as between Liberal station and Sneed station?

A. If the horsepower was put in at the present time [fol. 4822] and provided our dehydrating unit at Sneed works as it looks like it is going to and our condensate

separator works, it will be approximately 15 million per day.

Q. In other words, the present capacity of 165,000 M.c.f. would be increased to 180,000 M.c.f.?

A. That is correct.

Q. Under the basic load expenditures?

A. That is right.

Q. And to 220,000 M.c.f. per day under the anticipated load expenditures?

A. That is right.

Q. Now, your second Principle or assumption reads as follows:

"It will continue to apportion its production between its own leaseholds and its gas purchase contract acreage on the basis now existing."

Is that correct?

A. That is correct.

Q. Who fixes the amount of gas to be produced from each company well?

A. I do.

Q. That is left very largely to your discretion?

A. Almost entirely.

Q. [fol. 4823] Who fixes the amount of gas to be produced from each gas purchase contract? A. I do.

Q. And that, of course, is left to your discretion very largely?

A. It is all based on the value of the well and the proration formula in the field and this is based on the fact that we assume that the same proration formula will continue in both fields as at the present.

Q. You used the term "based on the value at the well"?

A. Of the well.

Q. Value of the well?

A. That is right, the number of acres contained in the lease on which the well is drilled and the open flow of that well and, in Kansas, the pressure of the well.

Mr. Culton: You did not refer to dollar value then?

The Witness: No.

Mr. Culton: Gas value?

The Witness: Yes, gas value.

By Mr. Littman:

Q. That is the proration formula, is it not?

A. That is right. That is what this pertains to.

Q. The allocation is 50 percent to acreage and 50 ~~cent~~ cent to open flow potentials?

A. In the Panhandle Field.

[fol. 4824] Q. In the Panhandle Field. Now, what is the proration formula used in the Hugoton Field?

A. The last order in the Hugoton Field was a division of the total production and the apportionment was on the basis of 80 percent of the total production being divided as governed by the well head pressure on each lease, the number of acres on each leaser.

That is, the well head pressure times the number of acres contained in the lease was the basis for the division of 80 percent of the total production.

The other 20 percent was divided on the basis of a 20-minute pitot tube open flow test.

However, the 1938 order was the same with the exception that the division of the total production was 75 percent and 25 percent and we have continued to prorate on that basis and will continue to do so until some further order comes up, because the last order has never been effective and by changing from one method to another, it is a very considerable task and if the present order does become effective and we operate under it, then our field will not be badly out of balance and we can get our wells in a profitable standing and adjustment whenever that occurs.

Q. You said a minute ago you were going to operate under the—what method?

A. The reason I gave both of them was that I could not [fol. 4825] say that we operate under the present Kansas proration order.

I explained what that was and then I explained that we are operating under 75 percent of our total production being allocated on the basis of pressure times acreage and 25 percent to a 20-minute pitot tube open flow test.

Q. Do vendors have the right to put compressors on their own wells and produce gas in excess of the present proportion?

A. No, sir. We tell them how much gas they are to put into our line and they are at liberty to put compressors on their line, but still the amount of gas that they put into our system is governed entirely by their participation in the total system.

Q. Is the allocation in the Panhandle Field prescribed by law?

A. No, sir, that is an outgrowth of the old proration order that was once in effect in the sweet field, sweet Panhandle Field, but I would have to get a lawyer to say what case that it was ruled out but it is no longer effective.

There is a sour gas proration order but no sweet gas proration order. This 50-50 is the old sweet proration order.

Q. There is nothing to prevent you—

A. (Interposing) I would not say, without a lawyer.

Mr. Culton: I think it is appropriate for me to say their contracts provide they take on the same ratable basis they [fel. 4826] take from their own wells. Those contracts are not in evidence, but it is a matter of fact.

Their contracts provide that Panhandle Eastern take from these other parties on the same proratable basis as they take from their own wells.

By Mr. Littman:

Q. Of course, there is no limitation with respect to increasing your take from both your own wells and the gas purchase wells in a given field, is there?

A. Do you mean by "given field" one that is not operated under a valid proration order?

Q. I mean the Panhandle Field.

A. The Panhandle Field?

Q. Yes.

A. That is correct. The take could be increased or decreased. It is governed by good judgment, we hope, our rate of withdrawal.

Q. What would you say as to the Hugoton Field?

A. At the present time, I do not think that I would want to spend too much money as an independent operator

in the Hugoton Field, because they are getting to the point in this proration case where there is going to be some decision made and if it is necessary to operate in the Hugoton Field under the present order, then it will be entirely up to others as to how much gas can be taken from the Hugoton Field.

[fol. 4827] Q. Now, what would be the effect upon the total amount of gas recovered by Panhandle Eastern if Panhandle Eastern would draw more heavily upon its own wells?

A. I am sorry, I do not believe I get that question.

Q. What would be the ultimate effect upon the amount of gas eventually recovered by Panhandle Eastern if the company were to draw more heavily than it now does upon its own wells?

A. I would say that there would be a breach of contract there. That is, our contracts with our purchase companies all have ratable take clauses, and it would be impossible to do that without breaking the contract.

Q. Let me put that same question to you, assuming that Panhandle Eastern were to increase its take equally and ratably as between its gas vendors and its own wells but stepped the entire production up.

What effect would that eventually have upon its own production?

A. It would mean that we would, in all probability, get the benefit of some gas migration.

Q. It would have the effect, would it not, of draining the areas of others?

A. What others?

Q. Other leaseholds owned by others?

A. Yes, but when you say "others," you are taking in [fol. 4828] a great deal of territory, because you might not be draining the adjoining lease at all. The formation might be such that there would be compensated drainage clear back to a point in the field where there had been no development to date.

Q. It would have the effect, would it not, of increasing the total amount of recovery eventually by Panhandle Eastern?

A. Yes, it would.

Q. And that is one of the advantages in taking it out faster, is it not?

A. It would be an advantage if we were trying to take advantage of that, but we have the name of fair operators in both of those fields and we intend to keep that name, and for that reason we are developing in such manner as to avoid a rate of withdrawal which would be termed as exorbitant by other operators in the field, and that is one element that enters in the development system of our company.

Q. Mr. Hinton, your third assumption appears on Page 6, and reads as follows:

"Additional wells in Panhandle Eastern's reserves in the Panhandle Field will be drilled on only its own leases."

In your discussion of that assumption, you point out that there are 15 locations on the leaseholds in the Panhandle Field belonging to Panhandle Eastern Pipe Line Company, do you not?

[fol. 4829] A. That is right.

Q. Aren't those 15 wells set forth in your statement of capital expenditures to be made under both the basic and anticipated loads?

A. Yes, sir. Going back to 3 there, I just wondered if you noted the exception of the one location that there may be an additional purchase well or an additional well drilled on acreage under a gas purchase contract?

Q. Yes, I noted that. I was confining my question to the 15 locations on the leaseholds in the Panhandle Field owned by Panhandle Eastern.

Now, those 15 wells are going to be drilled under both the basic and the anticipated load theories, is that right?

A. That is correct.

Q. Which leads me to believe, and I want you to tell me whether I am correct or not, that the reason for drilling these wells is primarily because of the obligations of existing lease contracts?

A. Well, I do not know whether we would say obligations or not, I would say, under the terms of the present lease, we are not obligated to drill under all of those, and I am not sure whether we are obligated to drill on any or not.

We could let those leases expire, but if we wanted to keep them as part of our reserve and be assured that we could continue to have them, it will be necessary to drill [fol. 4830] them, because somebody might come in there and offer \$25 or \$50 an acre for those same leases and renew them or top-lease our present lease.

Q. The point I am making is simply this, Mr. Hinton, in so far as the basic load is concerned, it would not be necessary to drill these 15 wells to provide sufficient gas?

A. No, it would be economical to drill them, though.

Q. It would be advisable to drill them?

A. It would be economical to drill them, as well as advisable.

Q. But not because of the immediate requirement of gas?

A. No, that is right, but in order to avoid paying a renewal cost and also in order to get the benefit of those wells as a participating element in the total market from the Panhandle Field, it will be cutting back the amount of gas which we buy and making a total over-all saving to Panhandle Eastern which was taken into consideration, as well as the lease term.

Q. Well, Mr. Hinton, the last sentence in the first paragraph of Page 6 was the one that I was trying to have clarified. You say:

"The time for drilling these wells will be determined by the demands for additional gas and the obligations of existing lease contracts."

[fol. 4831] Now, in so far as the basic load is concerned, the time for drilling these 15 wells will be determined—

A. (Interposing). By the terms of the lease.

Q. By the terms of the lease, is that right?

A. Yes.

[fol. 4835] C. H. HINTON a witness, having been previously duly sworn, resumed the stand and testified further as follows:

Cross-Examination (Continued)

By Mr. Littman:

Q. Mr. Hinton, does Panhandle Eastern expect to secure additional acreage in the Panhandle Field?

A. No.

Q. Why?

A. That is practically an impossibility.

Q. Why?

A. Because there is no acreage left to secure that lies within the area in which we operate and which would be economical to develop and connect to our present system.

Q. Have you made a full and thorough investigation of that?

A. Yes, sir.

Q. Does Panhandle Eastern expect to secure additional supplies of gas from vendors in the Panhandle Field?

A. I do not think so.

Q. Why?

A. Because if we did secure additional gas there, it would mean that we would take less gas from the acreage which we have under lease and which would not permit our recovering the amount of gas which we should re-[fol. 4836] cover from our own acreage and that which is now under gas purchase contract.

Q. I am afraid I do not understand your answer, Mr. Hinton.

A. It again goes back to the rate of withdrawal per acre from the Panhandle Field in order that we would be able to withdraw from our own acreage and that which is now under gas purchase contract the amounts of gas which would insure that we are protecting our reserve.

If we took on the additional acreage, it would mean that the rate of withdrawal per acre would be curtailed to the extent that we would not be able to get the amount of gas that we should from our present acreage.

Q. Why?

A. Because we would be taking less gas per acre each year by the addition of more wells.

Q. I am afraid I still do not understand your answer.

A. Perhaps I should give you an example.

Q. Very well.

A. We will assume that our rate of withdrawal per acre from wells connected to our system at the present time is 500 M. C. F. per year.

Q. Now, you are speaking of both the company-owned wells and vendors' wells?

A. That is right.

[fol. 4837-4847] We will assume that we connect 20 additional wells. The amount of gas which we would take per acre would be reduced in the proportion that the 20 additional wells would participate in the total market or the total withdrawal by Panhandle Eastern and by declining that rate of withdrawal, it would place us in the position that we would not be able to take as much gas from the reserve which we have at the present time as we will without the connection of additional wells.

Q. Do you mean that these 20 additional wells would drain your present acreage?

A. No.

Q. Is that what you mean?

A. No. You just have to take into consideration the total withdrawal by everyone from the Panhandle Field and if we at this time would connect additional wells, it would mean that we would retard the amount of gas that we take from each of the present wells, and we feel that we have about the proper development there for the system which we feel it would be economical to develop to take the production from the Panhandle Field.

Trial Examiner: May I ask if there is some understanding between the competitive companies that in any way affects the statement you have made?

The Witness: There is none. It would be better, perhaps, if there were.

[fol. 4848] Mr. Lee: May I ask a question there?

Would that addition you have referred to, would that situation operate to preclude Panhandle from obtaining additional wells in the field if they were available?

The Witness: No. When you say, "preclude," I do not know exactly what the interpretation of that would be.

Mr. Lee: You told Mr. Littman that there were no more gas leases, as I understood it, or purchases of wells available in the Panhandle Field.

The Witness: That are not under lease.

Mr. Lee: Would the condition that you have just described preclude Panhandle from taking on additional leases if the opportunity were afforded in that field?

The Witness: It would, in this respect, Mr. Lee. The amount of gas that has been withdrawn from that field to date and the field performance indicate that the remaining length of life of that field does not extend over a great number of years, and in order to add these additional wells and maintain our rate of withdrawal per acre, it would mean that we would have to spend many thousands of dollars to increase the capacity of our pipe line system from both the gathering standpoint and the trunk gathering line from Sneed into Liberal, Kansas, and it is debatable whether that would be a wise expenditure, taking into consideration the status of the Panhandle Field at this time.

[fol. 4849] By Mr. Littman:

Q. Do I understand you to mean that if a gas vendor had a number of wells, let us say, some reasonable distance from your acreage so as to exclude the question of drainage, and wanted to sell gas to your company, let us say in the amount of 5 million M. c. f. per year, that you would not be interested in buying that gas?

A. I do not think we would unless the picture would take a radical change from the future that we have in mind. When I say "we," I mean the company.

Q. Suppose it were 10 million instead of 5 million M. c. f. Would that change the picture any?

A. No, because with our present projected estimated market, we have laid out a development program which is believed to be the most economical from the standpoint of the production of gas by this company.

Q. Well, you mean that you are more or less wedded to a definite program which you have submitted in your Exhibit 42 of capital expenditures and withdrawals, is that right?

A. No, I would not say that we were wedded to any definite program, except that program which is backed by figures that show it is sound economics to develop as we have laid out our plan.

Mr. Goodman: May I ask a question at this point?

Mr. Littman: Certainly.

[fol. 4850] By Mr. Goodman:

Q. You have developed a plan for what you regard as the most economical exploitation of the field in view of your markets, is that right?

A. As nearly as possible.

Q. And if you acquired more acreage, that would be a substantial deviation from that plan?

A. Do you mean more acreage in the Panhandle Field of Texas?

Q. In the Panhandle Field.

A. That would.

Q. And it would effect a less economical exploitation of the field?

A. It would mean more capital expenditure and it would mean less recovery.

Q. I understand. The total result, in your judgment, would be that the acquisition of more acreage in the Panhandle Field would result in a less economical exploitation of the field in comparison with the plan that you have now?

A. There is only one way that I would qualify that, and that would be that if our company would be able to have at this time, without spending a great deal of money, an additional 50,000 acres in the Panhandle Field, then I would say it would probably justify our rearranging our system.

[fol. 4851] Q. Yes. In other words, it would depend upon the costs involved in modifying your present plan?

A. That is right.

Q. And the results that could be secured?

A. Weighed against the development in the Hugoton Field.

Q. Yes, I follow you.

Now, Mr. Hinton, how long has that plan to which you have just referred been in existence?

A. In a vague sort of form, for the past several years.

Q. Well, have computations been made concerning the ultimate economy of that plan?

A. There have.

Q. And where do those computations appear?

A. I am not sure that they have been filed away carefully. They might be difficult to find, but they have been made and they have been studied and then probably laid aside.

The management has gotten the general idea in mind and they were never carried further into detail.

Q. You have a fundamental plan for the exploitation of the Pankhandle Field showing the costs of that exploitation and the results which may be secured, haven't you?

A. You mean outside of the study here? (Indicating)

Q. Well, you answer.

[fol. 4852] A. Not a detailed study showing dollars and cents all the way along. It is one of those things that in the gas business the general idea is obtained by making various sets of figures.

It is presented to the management and when it is felt that the management has the problem in mind, then it is not pursued further into detail.

Q. But you have some approximation of unit costs of exploiting that field, haven't you?

A. Yes, if we did not—

Q. (Interposing) You would not know where you were?

A. That is right.

Q. You would not have the basis of material to determine whether it would pay to take on additional acreage?

A. That is right.

Q. In other words, that involves some idea of what you will spend to exploit the field entirely, doesn't it?

A. I would say that it does, not in a detailed sort of way, but the key to that problem, Mr. Goodman, is the total amount of gas, what percent of the gas that was originally in place can be recovered by a company.

Q. That is right, that is right.

Now, the cost of recovering it approximately, an approximation of the cost—

A. (Interposing) That is right.

[fol. 4853] Q. (Continuing) No doubt not in the form of the exact itemization of the cost items, but by such

generalities as one customarily uses in projecting plans for a rather remote future, is that right?

A. That is correct.

Q. Do you make those studies?

A. I make probably the most of them.

Q. And who passes upon them?

A. When I get something in mind that I feel should be called to the attention of the management, I take it to my immediate superior first.

Q. Who is he?

A. Mr. H. W. Pope.

Q. Mr. Pope.

A. And he will usually call Mr. Neuner and then there will probably be four or five of the department heads go over the problem and see whether it is sound or not. The idea—

Q. (Interposing) Just a minute. As a matter of fact, the fundamental project for the exploitation of the Panhandle Field is something which is Mr. Neuner's responsibility, isn't it?

A. I do not believe that you could say that would be Mr. Neuner's total responsibility.

Q. Well, I do not mean to speak in terms of total, but [fol. 4854] he is the top man on it, isn't he, for all practical purposes?

A. No, that would go to Mr. Creveling before any definite action was taken on a major problem.

Q. Well, I am not referring to definite action, I am referring to that fundamental master plan of the exploitation of the field and the development of the tentative and fairly standard unit costs which you use to guide you and as generally used by the management as a rule of thumb in determining whether it would be advisable to take on more acreage or as being basic to your immediate reaction that it would not, for example.

A. It is most certainly true that Mr. Neuner would have to have the plan well in mind.

Q. Yes, perhaps better in mind than you would, is that right?

A. Well, looking at the over-all picture, certainly. Looking at the production end of it, probably not as well, because he would not have time to go into the detail that I would have on that problem.

Q. Now, what written form do these studies take?

A. There are very few studies that are prepared that are made in final written form. Most of the studies—

Mr. Culton: (Interposing) If you have some example, show him one.

Mr. Goodman: Wait a minute. I do not want to be interrupted here.

[fol. 4855] The Witness: Most of the studies are made on 14-column paper with notations along and they are presented in pencil. They are seldom typed.

By Mr. Goodman:

Q. Do you carry, or do you make, a private reference study, that is to say, do you keep a general fundamental study as a matter of your private records for your own guidance in that matter?

A. I have a great many files of figures to which I refer from time to time after they have been prepared, perhaps two or three years.

Q. Well, do you systematize that and keep it together as a matter for your fundamental reference?

A. I hate to answer that question, because that is one of my weaknesses, that is, filing. I oftentimes have difficulty in going back and finding what I want, but since I am under oath here, that is what I have to say.

Q. Now, you say you have developed this in terms of unit costs governing the complete exploitation of the field, is that right?

A. That is right.

Q. And what units do you use? Do you have that in mind or on paper?

A. The units that I use include the royalty cost.

[fol. 4856] Q. The what?

A. The royalty cost. That is the royalty on the gas which is produced from our own leases, the purchase price of gas at the well head, the capital expenditure and the operation.

There are many items which I cannot get until it is possible to have the Accounting Department furnish the

data, that is, on amortization, the depletion of reserves from the standpoint of income tax and, well, you are more familiar with accounting than I am and I will probably miss some of them, but there are many items that are set up on the accounting records which I do not use or do not make myself.

They come from the Accounting Department, and it is seldom that I have the opportunity to compile a complete cost. That is, I base my studies usually on the cost of gas, purchase cost at the well head and weigh that against the capital expenditure required to change the amount which we get from our acreage from each field, and it is the governing cost as far as I am concerned, because the amortization and the depletion is a figure that is going to occur, in my judgment, about the same anyway, and I think those would be the governing factors on the control of a development in the gathering system of our company.

Q. Let me see if I understand you correctly. You take as a standard for the purposes of reference, the purchase [fol. 4857] cost of gas at the well head and then, in determining whether a particular development of a project is advantageous or not, you compare the costs or the unit cost of that which would result from that project if that project were carried through with the purchase cost of gas at the well head, is that your fundamental method?

A. Yes.

Q. And point of reference?

A. Yes, sir.

Q. And what figure do you use for the purchase cost of gas?

A. The purchase price.

Q. What figure is it? Is it one figure or may it be many figures?

A. No, I take the method of proration for that field and find out what different costs participate in the total market. That is, we have $2\frac{1}{2}$ cent gas, we have $3\frac{1}{2}$ cent gas, we have 4, $4\frac{1}{2}$ and 5 cent gas, and in order to determine the cost of gas, why, it is necessary to find out to what extent each price of gas participates in the total market.

Q. I see.

Now then, you find out a standard of reference for purchased gas, and then you prepare a cost study for producing gas under the new project or the contemplated project?

A. Yes. (Indicated by nod of head.)

[fol. 4858] Mr. Wheat: Did you answer the question "yes"?

Mr. Goodman: He answered "yes."

Mr. Wheat: He nodded his head, and I wondered if the reporter got it.

By Mr. Goodman:

Q. And that project is justified or not fundamentally by the relation of those figures, the unit cost on production in comparison with the unit cost of purchase, is that right?

A. Always keeping in mind that the greatest percent of the amount of gas estimated to be in place will be recovered.

Q. I see.

Now, do you have in mind, Mr. Hinton, a substantial development project for the recovery of gas in the Panhandle Field?

A. I would say that it is a medium-extensive program.

Q. I mean, do you have in mind a project—

A. (Interposing) You mean a definite—

Q. (Continuing) A definite project.

A. Yes.

Q. What is the name of that project?

A. Well, I do not suppose—

Q. (Interposing) The one you have in mind.

A. (Continuing) I do not suppose that it has this title on paper, but if I were going to make a title for it right now, I would say that it is "The additional requirement [fol. 4859] to the Panhandle Field, Texas, gathering system to secure the greatest ultimate recovery from reserves under lease and under contract at this time."

Q. And that project was reduced to a comparison with the unit cost of purchased gas, is that right?

A. No, because that includes purchased gas all the way through. That includes 53 wells now under gas purchase contract.

Q. I do not think you have quite answered my question.

I first had in mind definitely a project as we were talking about it, in which you would have occasion to compare the relative advantage of the project in comparison with the cost of purchased gas.

A. No, I believe that you have missed the point that I have tried to bring out, and that is this:

That in order to obtain a high percentage recovery from our present reserves, it is necessary that we take the approximate amount of gas which we have laid out or assembled in this study here, that is, Exhibit 43, Schedule 5, and in order to take the amount of gas that we have listed in this Schedule 5 of Exhibit 43, it is necessary to make the additional capital expenditures which have been set out, the reason being that the original line was not designed to carry these volumes of gas and it is not a study weighing between company cost and purchase cost of gas.

[fol. 4860] It is a capital expenditure that is required to take from both company and gas purchase wells amounts of gas which it is believed will give us our greatest ultimate recovery for the economical capital expenditure required.

Mr. Littman: You are now speaking, and have been speaking, of the anticipated load, haven't you?

• The Witness: Yes.

By Mr. Goodman:

Q. Put that out of your mind for the moment, and go back to the subject of our previous questions and answers.

We were talking about a method of determining the advantage of a particular project for the recovery of gas, and you mentioned a fundamental basis of reference, the unit cost of purchased gas, and I asked you to—

A. (Interposing) No, Mr. Goodman, I did not say the unit cost of purchased gas alone. It is a combination of the cost of company gas and purchased gas. It is a weighted figure.

In other words, if there is 50 percent of it that is based on the royalty cost and 50 percent on the purchase price, why, it is a combination of those two figures that actually set the cost of that gas at the well head.

Q. All right.

Now, I ask you to have in mind a specific project, exemplified by that mode of calculation. I do not see it in Ex-
[fol. 4861] hibit 43. That is not anything I had in mind.

I had in mind a specific project which exemplified unit cost calculations.

A. And by unit cost, what do you mean that that unit cost should include?

Q. Well, I do not care what it includes. I want a unit cost, not of material, but of the product, namely, of gas.

A. I would say that 43 is a specific problem and the cost of that gas under 43—

Mr. Littman: (Interposing) You mean Exhibit 43?

The Witness: Exhibit 43 in Texas at the present time, that the weighted average will be, as I recall, 1.8549 cents per M. c. f.

Mr. Littman: May I have that figure, please?

(Whereupon, the figure indicated was read by the reporter.)

The Witness: May I check that back?

Mr. Littman: It might be well to do that.

By Mr. Goodman:

Q. That is something that was developed in supplement to Exhibit 43, is that right?

A. That was developed for the 1942 budget.

Q. Now, I had asked you about that before?

A. That is right.

Q. And your counsel had stated that Mr. Burnham would be the—

[fol. 4862] Mr. Culton: (Interposing) That is not so.

Mr. Goodman: What is not so?

Mr. Culton: That I stated Mr. Burnham would testify on that. Mr. Burnham's testimony was related to the Consumers Power Company estimate.

That is what I told you Mr. Burnham would make an estimate on.

Mr. Goodman: Was it agreed that you would then produce Mr. Hinton's figures?

Mr. Culton: You may get any information Mr. Hinton has.

The Witness: That was my understanding, but Mr. Culton spoke up and said we would be glad to furnish that, and I brought the files on the strength of that, to give you that information.

Mr. Goodman: All right.

Just a minute, rather than consume time here by question and answer, I would prefer to see the information first.

Mr. Culton: Any time, sure.

The Witness: Sure.

Mr. Goodman: Is that all right?

Mr. Wheat: First let's get his check on the figure he quoted from memory, so the record will be clear.

Mr. Goodman: Yes.

Mr. Wheat: You were looking for the correct out-of-[fol. 4863] pocket cost-figure. Can you give that now?

The Witness: I can tell you one thing, it is within, I would say, 10/10,000's of a cent, but I had better check it.

Well, I find that I do not have that weighted back on this page. Would it be all right if I do that at the lunch hour and give you that figure, or I will give it at recess.

It is a matter of adding these up and dividing.

Mr. Goodman: That is all right.

Mr. Littman: What page of your working papers are you referring to?

The Witness: This is not a working paper. It is the estimated cost of gas at well head, 1942. It is a budget file, that Mr. Goodman requested.

Mr. Littman: Those papers and that file were not turned over to the staff of the Commission with your working papers?

The Witness: No, sir.

Mr. Littman: May I see that table for a few moments?

The Witness: Yes. It is not weighted back there, as I thought it was. I usually do that.

[fol. 4864] The Witness: The figure was 1.8709.

Trial Examiner: Now, so that your answer may be complete, will you state what that figure is?

Mr. Littman: That is 1.8709 cents?

The Witness: Yes, per M.c.f., that figure being the amount of money which is paid for royalty and for the gas purchased.

It is a combination of those two. The figure that I gave from memory was in error, due to the fact that we have increased our royalty rate from 4 cents per M.c.f. to 4½ cents, the past year.

By Mr. Goodman:

Q. Mr. Hinton, you have produced a folder of papers and you have indicated that you intend to present to me [fol. 4865] that folder of papers in compliance with a request of mine. A. Yes, sir.

Q. Now, will you state the request which you consider that that folder complies with?

Mr. Culton: We submit that is highly improper interrogation, Mr. Examiner.

Trial Examiner: I assume what Mr. Goodman is asking for is a definite statement by Mr. Hinton as to what this folder contains. Is that not true?

Mr. Goodman: Well, this folder is presented in compliance with a request.

Now, I want the presentation to have a purport and the witness to state the purport of the presentation, rather than to deal with some generality.

In other words, I want him to state his understanding of the request which the presentation complies with and the nature of the folder itself.

Mr. Culton: We submit that it is improper interrogation, Mr. Examiner.

The Witness, as the Examiner has suggested, can state exactly what the folder is.

Mr. Goodman: No.

Trial Examiner: The record will show that almost exactly, I think, but I think now that Mr. Hinton should state just what this folder is and we know that this folder [fol 4866] and its contents have been offered to Mr. Goodman for his examination.

The Witness: This folder, which is titled, "Estimated Cost of Gas at Well Head, 1942", is probably somewhat in error, because—

Mr. Wheat: You mean the title is in error?

The Witness: The title is in error, because that might lead anyone to believe that the cost of gas at the well head included the cost of operation and the amortization of investment and many other things that it does not include.

What this folder does include is the amount of gas which Panhandle Eastern proposes to take from the west sweet Panhandle Field, Texas; the portion of the Hugoton Field located in the State of Kansas and the portion of the Hugoton Field located in Oklahoma.

It shows that the gas will be prorated and the amounts of gas which will be produced from each field and portion of the field and the amount which will be purchased; the unit cost showing that one-eighth of the royalty at 4½ cents and the proportion of the purchased gas which will be purchased at 2½ cents and 3½ cents plus one-eighth of the one-half cent increase in royalty which will be paid to the Shamrock Oil and Gas Company.

I believe that that describes it to the extent that you wish.

[fol. 4867] By Mr. Goodman:

Q. What was the occasion of your assembling those papers and bringing them here?

A. The original purpose of assembling these papers, these calculations, was to furnish Mr. Morton the cost of gas per month for the year 1942, and when I say cost of gas, I mean royalty and purchase price, in order that he could include that figure in his 1942 budget and know the amounts, approximately, that would be required to take care of this cost each month during the year.

The reason that this file was brought here was at your request.

Q. And what request do you refer to?

A. A request that you made during a period of cross-examination of several days ago, at which time you indicated that you would like to know the amount of money that we were paying for gas.

Q. You then say that this is in response to a request of mine to know the amount of money you were paying for gas? A. The bringing of this file here, yes.

Q. Yes, and it is offered for that purpose?

A. That is correct.

Mr. Goodman: All right.

Trial Examiner: May I ask, Mr. Hinton—it may not be necessary when the papers are examined—but I would like to have you state whether this computation involves [fol. 4868] only the cost of gas that is purchased outright, and the cost of gas on which royalty is paid?

The Witness: The royalty cost only, not the cost of gas on which royalty is paid, because it does not—

Trial Examiner: (Interposing) Well, that is true.

The Witness: It is just the royalty cost.

Trial Examiner: It is just the royalty item?

The Witness: Yes, sir, that is correct.

Trial Examiner: It does not include production costs?

The Witness: No other costs.

Trial Examiner: And it does not include data with reference to gas produced on land wholly owned by the company if there are any such areas?

The Witness: You mean, other than just the royalty on that gas? It does not include that.

Mr. Culton: What the Examiner is getting at is, I think, the fact the company does not have fee-owned land.

It pays royalty on all—

The Witness: (Interposing) Yes, that is true. I am sorry, I missed your point. We do not own any land or any royalty.

Mr. Culton: Does that include what gas is produced in Local Area?

The Witness: No; this is just for the fields described.

[fol. 4869] Mr. Littman: What fields are those?

The Witness: The Local Area Field.

Trial Examiner: He has named them, Mr. Littman.

The Witness: I described them.

Trial Examiner: The Panhandle, except the sour gas area and the Hugoton in Oklahoma and Kansas. Is that not right?

The Witness: That is correct.

Mr. Littman: You totaled the costs of royalties and the cost of gas purchased in those fields?

The Witness: No. They show on separate sheets the figure which I gave of 1.8709 cents per M.c.f. applies only to the West Panhandle Field, Texas.

Mr. Littman: And that figure was obtained by totaling for that field the cost of gas purchased and the total royalty cost and dividing the sum of the two by the number of M.c.f.'s, is that right?

The Witness: The total number of M.c.f., yes.

Trial Examiner: These papers, then, do not contain a similar computation for the Hugoton Field?

The Witness: Yes, they do, but—

Trial Examiner: (Interposing) It is, separate?

The Witness: (Continuing)—but I interpreted Mr. Littman's question there to mean that this figure which I gave would apply to a combination of both fields rather than the Panhandle Field alone, and I wanted to make it clear that this does apply only to the Panhandle Field, [fol. 4870] Texas, gas.

Mr. Littman: That is, the 1.8709 cent figure?

The Witness: Yes.

By Mr. Goodman:

Q. Mr. Hinton, now the papers in this folder include all of the papers that you handed to Mr. Morton, is that right?

A. No, sir. The paper which I handed to Mr. Morton is the summary of the detail sheets here.

In other words, it is necessary to make rather extensive calculations, because we have to determine what proportion of the gas will be produced and what proportion will be purchased and when all of these calculations are made and the answers obtained, they are placed on the summary sheet, which goes to Mr. Morton, and he retains that for his budget files.

Q. And is the summary sheet in the folder too?

A. No, sir.

Q. In other words, you do not show me the summary sheet at all?

A. I show you what is on the summary sheet, but I show it by a collection of detailed sheets.

Q. All right.

Now, except for the summary sheet, the folder is complete in connection with what you gave to Mr. Morton?

A. Yes, sir, that is correct.

[fol. 4871] Cross-Examination (Resumed)

By Mr. Littman:

Q. Mr. Hinton, a while ago we were discussing the matter of securing additional gas supplies from other gas

vendors than those who are now under contract with Panhandle Eastern.

Have you even made an investigation to ascertain how much additional gas could be secured from the Panhandle Field by Panhandle Eastern from additional gas vendors?

A. In a rough sort of way, yes, sir.

Q. What did your investigation disclose?

A. That there is acreage which is under lease to other companies at this time that could be developed and probably placed under gas purchase contract.

Q. At what price?

A. It did not go that far. It is assumed that the price would be the usual purchase price of gas in the field.

Q. The usual field price; and what is the field price?

A. All the way from .6 of an M.c.f. up to 4 cents, I believe.

Mr. Wheat: Six-tenths of a cent per M.c.f.?

The Witness: Six-tenths of a cent. I believe there is some gas that sells for 6 cents down there. In the area in which we operate, the average price is $3\frac{1}{2}$ cents per M.c.f., usually with an agreement in there concerning taxes and the application of higher royalty rates to apply [fol. 4872] to that price.

Mr. Culton: That is on long-time contracts?

The Witness: Yes, sir. Well, purchase contracts are usually for the life of the lease.

By Mr. Littman:

Q. And the average field price would be close to what amount? A. Three and one-half cents per M.c.f.

Q. In the Panhandle Field?

A. In the West Panhandle Field, in the areas in which we operate.

Q. Now, Mr. Hinton, can you give us an idea of how much gas you ~~found~~ might be available by purchasing from other gas vendors than those who are now under contract?

A. I do not recall that figure exactly. I believe it is around 11,000 acres.

Q. And approximately where was this acreage located?

A. Moore County, Texas.

Q. Can you give us a general idea of how much gas might be expected to be secured from that amount of acreage, let's say, over the same period as that which you show in Schedule 5 of Exhibit 43?

A. If you will tell me at what rate of withdrawal you want me to base it on, I believe I could tell you fairly closely. The rate of withdrawal would govern the amount of gas that could be recovered to as much as 50 percent. [fol. 4873] Q. Well, I think it would be best for you to assume the same general rate of withdrawal as that which you assumed for purposes of Schedule 5 in Exhibit 43.

A. In order to take at the same rate of withdrawal into our system, it would be necessary that we have a market increase out of the Panhandle Field that would be equivalent to the amount that we would withdraw per acre.

Q. That is the main barrier that stands in the way of your advising the company to go out and secure this additional gas purchase reserve, is that correct?

A. And after we had that—

Q. (Interposing) Is that correct, sir?

A. That is correct, yes.

Q. You see, when you nod your head, the record does not show that, and I would like to have you speak your answer into the record, if you did not.

A. I will do my best, sir. I would like to go ahead—

Q. Yes.

A. (Continuing) And tell you a bit further what would happen.

If we would add 11,000 acres to our present property and take at the same rate of withdrawal we are taking from our property, it would be necessary, in all probability, to loop the entire distance between Sneed and Liberal and add many thousand horsepower.

[fol. 4874] Mr. Wheat: Of compressor power?

The Witness: Yes.

By Mr. Lattman:

Q. That is, of course, based upon the assumption that you would take it out as fast as you are taking it out and at the same rate of withdrawal as shown in Schedule 5 of Exhibit 43? A. Yes, sir.

Q. And if you did not take it out that fast, you would not have to necessarily construct these additional facilities to which you have referred?

A. But if we did not take it out that fast, we would not recover the same amount of gas which is connected to our system at the present time, because by retarding that withdrawal, it would mean that we would not meet the average of the field and, therefore, there would be a migration of our gas to other portions of the field.

Q. In other words, you would not get all of it?

A. We would not be protecting our reserve.

Q. But you would get a substantial part of it?

A. We would, in all probability, get a substantial part of it, but the cost per M.c.f. would go considerably higher than it is under the plan we have set forth.

Trial Examiner: Is the drainage factor different in the [fol. 4875] Panhandle Field from what it is in the Hugoton Field?

The Witness: Yes, sir.

Trial Examiner: In what way?

The Witness: First, by the total withdrawal from the field and, secondly, that the Hugoton Field is a tighter formation of less thickness and migration of gas in that field is not as free as it is in the more porous Panhandle Field with the greater thickness through which it can travel.

Trial Examiner: Reference has been made to a development in the Hugoton Field involving the drilling of one well per square mile as a means of removing all of the commercially profitable gas.

Is that same rule true in Panhandle?

The Witness: I would say that it would be easier to drain a square mile in the Panhandle Field, Texas, by one well than it would in the Hugoton Field.

Trial Examiner: Because of the freer migration of the gas?

The Witness: That is right, the permeability being higher there.

Now, the reason I say that, is due to the fact that I have spent many hours studying the reaction of wells blown into the atmosphere and studying the length of time that is required to build up the pressure and the Texas wells show that they are far superior in permeability, the Texas formation to the Hugoton, Kansas, formation.

[fol. 4876] Trial Examiner: Are you able to state whether or not the competitive area of the Panhandle Field where wells of competing companies are rather close to each other, whether there has been difficulty in those competitive companies taking their requirements that have been marked or outstanding?

The Witness: Do you mean daily requirement or annual requirement?

Trial Examiner: I was thinking of total recovery from a given area.

The Witness: Yes, total recovery, there has been and probably always [—] be that trouble.

Trial Examiner: Will you give us some further light on these competitive factors; why you are in close competition?

The Witness: It is felt that the close competition to all producers of sweet gas is the sour gas field which is located in the northern part of Moore County, where the withdrawal per acre is more than twice what it is in the sweet field, and the recent pressure maps indicate that the withdrawal is beginning to be felt in the sweet gas area.

Trial Examiner: In other words, the sweet gas is migrating into the sour gas area from which the gas has been rapidly withdrawing?

The Witness: The pressure maps indicate that that is what is happening.

[fol. 4877] Trial Examiner: These factors you have now described are related to the prediction that the Panhandle Field will be less long-lived than the Hugoton Field.

The Witness: That is correct, yes, sir.

By Mr. Littman:

Q. Now, Mr. Hilton, I do not believe that you have yet answered my question as to the approximate amount of gas that you would expect to recover from these 11,000 acres owned by gas vendors, assuming the same rate of withdrawal as that shown in your Schedule 5 of Exhibit 43 and assuming the facilities which you assumed are required to carry the gas to the market?

A. Well, before I make an answer to that question, I would want to get that acreage, see where it is located, see what development has taken place immediately around the acreage, and to examine some of the logs in that vicinity, because to just make an answer to that problem without giving it consideration could run into errors that would be far beyond approximate.

In other words, it is not a question that can be covered just offhand.

Q. Well, Mr. Hinton, I understand that no such estimate as that which I have asked you to make would be exact, but I thought you might give us some general idea.

It would be a substantial amount of gas, would it not? [fol. 4878] A. Yes. If you want to assume a figure, why, say 10 million an acre. That is a good, round figure.

Q. You mean that would not be an unreasonable figure to assume?

A. Not if that acreage is located where I remember it. It could be an unreasonable figure if that is farther to the margin or around areas in which there are a show of water in the wells at the present time or around which small wells have been developed.

Q. Do you mean 10 million M.c.f. recovery per acre?

A. Yes. After all, that is just an assumed figure, but probably not unreasonable.

Q. It is an assumed figure, but the figure you gave me was the total recovery figure, was it not? A. Yes.

Q. And to the best of your ability with the information that you have at hand and your general knowledge of the field, the 10 million M.c.f. figure is your best judgment of the amount of gas that would be expected to be recovered from these 11,000 acres? A. Yes.

Q. Now, when did you last make an investigation of the amount of purchased gas that might be available to Panhandle Eastern?

A. It has been some time. It is just a knowledge that [Vol. 4879] you get of the field by being around it.

You know that there is a certain amount of available acreage. It is possible that it could all be under contract at this time, but I still believe that there is about that much.

Q. Available? A. Yes.

Q. To Panhandle Eastern?

A. I would imagine that we could probably make a contract for it if we so desired.

Q. Now, the 11,000 acres of gas acreage which is available to Panhandle Eastern is that which is in the immediate vicinity of Panhandle Eastern's present acreage, is that right? A. Fairly close, yes.

Q. Now, there is additional acreage available out further and beyond that locality, is there not?

A. Yes, there is a great deal of marginal acreage which will probably never be drilled at all.

Q. Well, isn't there other acreage available that is owned by individuals that would be willing to sell gas?

A. I am not sure about that because I have not been concerned about that.

Q. You have not made an investigation of that?

A. No.

Q. In other words, you have not made an investigation of how much gas is available for purchase in the entire Panhandle Field?

[Vol. 4880] A. No, because it would not be a sensible thing to do from the standpoint of our company.

Q. You are primarily interested in the acreage close to your lines at this time, is that right?

A. We are concerned in getting the greatest amount of gas from the Panhandle Field that can be obtained under the proper economic development.

Q. Now, the economic picture may change very rapidly, may it not?

A. Well, it may. It hasn't in the past several years but, of course, there are lots of things that are changing now quite rapidly.

Q. I think we can all agree on that.

The economics, to use your term, of operation in the Panhandle Field may be entirely different ten years from today than it is today, isn't that correct?

A. That all depends on what happens to the rate of withdrawal.

Q. And nobody is any too sure about the rate of withdrawals either, are they?

A. No, not too sure, but our daily report of last week showed that the daily withdrawal from the Panhandle Field was about 74 million per day greater than it was a year ago for pipe line use only.

[fol. 4881] Q. Well, the economics which you have been interested in are primarily those of today, are they not?

A. No, I would say they are those of today and of the next several years.

Q. The immediate future? A. Yes.

Q. How far into the future?

A. I would say, at least ten years.

Q. Did you make a detailed study of the advisability and the economy of acquiring any part of these 11,000 acres under gas purchase contract?

A. I do not recall making a study of that particular thing, no. We have made a great deal of studies on the connection of gas purchase acreage, and I would say that we have connected probably more distress gas wells than any other one company that operates in either of the fields.

Q. In other words, you have not made such a—

Mr. Culton: (Interposing) Would you mind letting him explain what he means by "distress gas wells"? That is a term that he and I know the meaning of, and you gentlemen probably do, but the record does not show it.

The Witness: A distress well is a well that is owned by a man who thought he could get a market when he drilled and later found he was unable to get a market and rather than let that develop or stay there with that investment in it, the company entered into a gas purchase [fol. 4882] contract with the producer.

Trial Examiner: Usually at a very advantageous price?

The Witness: No, I would say that it would be the average of the field.

Mr. Culton: Some of them have been more advantageous than others, though?

Trial Examiner: In other words, there is a commercial factor that enters in?

Mr. Culton: Of course, we would not purport to do it and lose money, would we?

The Witness: We have lost a great deal of money by connecting those wells.

Mr. Goodman: I thought the term "distress well" indicated that relief of distress was a big-hearted gesture.

The Witness: And that is exactly what I would say was meant:

Mr. Culton: Complete your answer. You had started to answer the question as to the cost to the company.

The Witness: That same thing would happen if we would connect those 41,000 acres we are discussing at this time. That would cost our company many thousand dollars to go in and connect that acreage.

By Mr. Littman:

Q. And the primary reason why you do not step in and [fol. 4883] acquire that acreage is simply because you do not, at this time, have the market for it, is that correct?

A. That is correct.

[fol. 4884] By Mr. Littman:

Q. Mr. Hinton, you have from time to time referred to figures which represent production-per-acre figures. Will you state whether or not you have at hand the production-per-acre figures that you used in arriving at your estimates in Exhibits 42 and 43? Perhaps before giving us those figures you might define what you mean by the term "production-per-acre".

A. It is the number of m.c.f. produced per acre per year.

Q. Throughout the entire field?

A. Oh, of course, that is an average. That doesn't mean taking into consideration the certain number of feet away from the well bore that a certain number of m.c.f. is produced from and declining that on out from the well bore, but what it does mean is the number of acres under lease and it does not mean the total withdrawal area of any well.

Q. Well, in your previous discussions you have stated that you, at various times, compared the production-per-acre figures of Panhandle Eastern's acreage with that of all operators in the Panhandle field.

A. Yes, sir, I have, but I do not have those figures with me.

Q. Do you know what the average for the entire Panhandle field was in 1941, for instance?

[fol. 4885] A. Offhand, I do not,—I can tell you,—for the year 1941, because the total production figures are not yet tabulated. That is obtained by an exchange between companies and the data from the Railroad Commission, and that is not yet out for the year 1941.

Q. Do you recall the figure for the year 1940?

A. I do not, but I can furnish that figure to you.

Q. Well, suppose you supply the figure for the year 1940.

A. Now then, when you asked for that figure, did you want it for the entire Panhandle field, did you want it for the west Panhandle field, or did you want it in the areas in which we operate and that, in my opinion, is the figure that should be used?

Q. Well, is that the one that you used, the latter one?

A. Yes, sir.

Q. What we want is the figure that you considered, so we will ask for the latter character of figure.

A. The latter figure, however, is governed by the overall picture of the field, that is, the sour gas must be taken into consideration on that, not as a figure to show what the withdrawal is in these particular areas, but to show what is happening to the entire field in order that we can forecast what the influence of this heavier withdrawal from the sour gas area will be upon the areas in which we operate.

[fol. 4888] Q. Mr. Hinton, be more specific with reference to the production-per-acre figures. You testified that you used certain production-per-acre figures to arrive at the figures shown in Schedule 5 of Exhibit 43. I would like to know what those figures are. You are now showing me the page of your working papers?

A. That is right. That is File No. 39. It is a group [fol. 4889] area summary and it shows the number of wells that had been drilled up to July 31, 1936 and on down through July 1941 in each area. It, also, shows what the withdrawal from each of these areas had been for those years and it shows what the withdrawal per acre in each of those areas had been.

Now, the only thing that I don't have here to furnish for your information is what the withdrawal from the Panhandle Eastern acreage has been through those years compared to this and I have it somewhere, but I thought it would be in the folder here. It is possible that I worked it out and did not place it in these folders, but I have data here so that I can readily work that out and furnish it to you.

Q. Well, these areas to which you have referred are the areas in which the Panhandle Eastern production system is located.

A. That is correct, and is shown on an exhibit,—I don't know what number,—but it is a group area map.

Mr. Culton: I think it is 44, I am not certain.

The Witness: It is either 44 or 46.

Mr. Wheat: Just a second, we will get that.

Trial Examiner: 46.

Mr. Culton: That is right. I have checked on it.

By Mr. Littman:

Q. Now, what is the source of the data shown in your [fol. 4890] working papers, File No. 39? A. Yes.

Q. Which shows the summary of withdrawals and acreage by group areas in the Panhandle field?

A. The records of the Railroad Commission, located at Pampa, Texas.

Q. And does it include all of the acreage line within the various groups termed "A" to "G", inclusive?

A. Yes, all within the boundary lines of those group areas.

Q. That is acreage owned by the others as well as Panhandle Eastern?

A. All acreage, regardless of the owner.

Q. And all wells? A. And all wells.

Q. What effect did you give, in arriving at your conclusions in Exhibit 43, to the average production per acre throughout the entire west Panhandle field?

A. I only gave consideration to these group areas as governed by the total west Panhandle field, also, the east sweet field and the west sour field. We operate in a certain portion of the west sweet field and the group areas there are so divided as to give us like operating conditions in each of those areas. Now, if we would only take the areas as outlined there, and not give consideration to the outlying portion of the field, why, we would get an answer [fol. 4891] which would not be even close to approximately right.

Do I make myself clear?

Q. No, you don't, Mr. Hinton. Perhaps if you would elaborate on that a little we would follow you better.

A. I believe the best way to explain that would be to put up your group area map.

Q. Exhibit No. 46? A. Exhibit No. 46.

Q. Very well.

Mr. Culton: Do you have your copy with you?

The Witness: I didn't save one.

Is there an exhibit here that shows the outline of the Panhandle field of Texas?

Mr. Littman: Yes, Exhibit 75 or Exhibit 76. I think Mr. Davis' exhibit contains a small map.

Mr. Culton: I think it would be better to use the latest rock pressure map. It probably has more of the things you want to talk about on it, the 1940 rock pressure map.

Trial Examiner: That is Exhibit 26.

The Witness: Now, in determining what is the proper procedure to take, from the standpoint of the Panhandle Eastern Pipeline Company, in finding out what our rate of withdrawal should be from its acreage in the Panhandle field, we weigh like areas as nearly as possible with what is happening in general in that area. In other words, we [fol. 4892] have in the group "A" a group of 15 company wells.

Trial Examiner: You are referring now to Exhibit 46 for identification?

The Witness: Yes, sir.

Now, we know that by looking at the pressure map over here, which is Exhibit 26, this general area which is covered by group "A" lies in the eastern portion of the west sweet field and that the pressure gradient from the north part to the south is 250 pounds. Therefore, we know that in the short space covered by this group there is going to be a decided migration of gas from this area into the areas of lower pressure.

Mr. Culton: May I suggest that you explain, for the purposes of the record, what you mean by a pressure gradient of 250 pounds.

The Witness: The difference of the maximum and minimum pressures that prevail in that area.

Trial Examiner: I think it might be well also, Mr. Hinton, for you to explain the relationship of the area to which you now refer in your group "A" to that area of development for the production of oil extending, roughly, from Pampa to Borger on the border line of this pressure zone, which you have referred to.

Mr. Culton: I suggest, also, in that same connection [fol. 4893] that we show the relationship to the sour gas area.

The Witness: The area immediately east and to the north, cutting out the northeast corner of group area "A", is an area of long-term oil production and that, in all probability, accounts for a large part of the gas that has been produced, of which a large part of it has not been

metered, that has caused the low pressures to the northeast side of "A".

Now, "A" is the easternmost area of the general area in which Panhandle Eastern has development. Now, we come over to area "B" and we find a situation that is altogether different; that is, it might be well to tell how many wells are located in area "A" at the present time, as of July 31, 1941 there are 98 wells.

By Mr. Littman:

Q. And those wells are owned by not only Panhandle Eastern, but the others? A. That is correct.

Q. And other producers? A. And other producers.

Now, we come over to group area "B" and we find a decidedly different situation. That is, there are not many wells in that portion of the Panhandle field and the rate of withdrawal is now about the same as it is in "A"?

Mr. Culton: You mean the rate of withdrawal per acre?

The Witness: Per acre, but the difference in pressure [Feb. 1894] in the two areas shows that there is a far greater amount of gas remaining in group area "B" than in group area "A".

Mr. Culton: Is there as great a pressure gradient in "B" as there is in "A"?

The Witness: No, the pressure gradient in "B" is 100 pounds.

Going up to area "C" we, again, come very close to the oil development—

Mr. Culton: (Interposing) Where is the oil development with respect to "C"?

Pardon me for butting in, Mr. Examiner, but I thought I might help him elucidate that.

Trial Examiner: I will appreciate it if you will watch those answers and see that they develop the facts fully in connection with these statements.

The Witness: Will you please read my answer?

(Whereupon, the last answer was read by the reporter.)

The Witness: (Continuing) Which lies to the northeast border of "C" and, in fact, I believe that there is oil production within a very few miles east of "C" to the northeast and there are a few oil wells which do not show on this map that are located in the extreme east edge of area "C" just to the north of the Canadian River.

Area "C" is an area which suffered a great deal of drainage during the time when gasoline plants were operating and the gas was blown to the air. There is no [fol. 4895] way of telling exactly how much gas has been produced from that area, but, again, we encountered lower pressures in "C" and the general history of that area shows that the average well drilled in this portion of the field has a much sharper pressure decline than those in area "B".

Mr. Culton: What is the pressure gradient of "C", approximately?

The Witness: About 150 pounds, that being from 200 to 350.

Now then, we come up to area "D" here, which has considerable development for the size of the area, there being 19 wells and the total acreage in "D" being 19,763 acres. The rate of withdrawal from "D" is comparatively light, yet we find that there is a low-pressure area that is coming in from "D", apparently, from the sour gas area.

Although this is not connected yet, I believe that next year's map will show that this low-pressure area coming down into "D" is coming from, not only the southern part of the sour gas area, but up further withdrawal is much heavier. For that reason the life of "D" would be less than in the area of "B" where there is less development, less migration. The migration in "B" can be only to the east. In "D" it is up where the withdrawal per acre is approximately twice what it is in this total area in which we operate.

[fol. 4896] Mr. Wheat: You mean toward the northwest?

The Witness: Yes.

Mr. Culton: What kind of production is coming from the northwest?

The Witness: Sour gas.

Mr. Culton: There is another sour gas area up to the northwest of "B", then?

The Witness: This is all sour gas.

Mr. Culton: That is what I wanted you to bring out.

The Witness: In fact, these two wells here which are owned by the King Oil Company and which are now connected to our line, at one time were pronounced as sour wells.

Mr. Culton: That location is near the north boundary line of "D" and "C".

The Witness: That is correct and just south of Sneed compressor station.

They do contain a slight amount of sulphur at this time, but not enough to keep them out of the sweet-gas class.

We come on down to area "E" here, which is an area of lighter development yet than "D" and is bordered on the south by acreage which is owned by the Canadian River Gas Company, which is only in a small part developed in comparison to the general development of all companies in the Panhandle field.

Now, the areas of "F" and "G" are, again, threatened by the sour gas area to the north and by the fact that the [fol. 4897] Texoma Natural Gas Company has shifted production from the low pressure area to the east of the field over into this area.

By Mr. Littman:

Q. By "this area", you mean "E"?

A. "F" and "G", and have carried on intensive drilling campaigns. The rate of withdrawal from both "F" and "G" will undoubtedly increase to a large degree within the next two or three years.

Now then, in this study when we weigh the total withdrawal of these companies, we not only take into consid-

eration the present rate of withdrawal, but we also determine how many available locations are remaining and at what pressures they can extract on these wells. Therefore, we can fairly well determine what the shift of production from one area to another will be and that is considered as well as the past rate of withdrawal.

Now then, I wonder if I have made myself clear.

By Mr. Littman:

Q. Can you read into the record at this time the rates of withdrawal for each of those areas for, let us say, the year 1941 or 1940?

A. Either one that you want.

Q. Suppose we have both.

A. The rate of withdrawal from area "A", which consists of 74,893 acres for the year 1941, was 573 m.c.f. per acre; from area "B", which consists of 31,309 acres, the [fol. 4898] rate of withdrawal was 553 m.c.f. per acre.

Q. Mr. Hinton, are those for the calendar years 1940 and 1941?

A. Yes, sir. All Railroad Commission figures are calendar-year figures.

Q. From January 1 to December 31?

A. Yes, inclusive.

Q. Of 1941?

A. No. These are mid-year figures. I should have put that mid-year in there earlier, but if you think it best to repeat it, I will. Withdrawal figures that have been read are from August 1 to July 31, inclusive.

From area "C", consisting of 65,901 acres, the rate of withdrawal for 1941 was 590 m.c.f. per acre; from area "D", consisting of 19,763 acres, the rate of withdrawal was 361 m.c.f. for 1941; for area "E", consisting of 39,059 acres, the rate of withdrawal for 1941 was 560 m.c.f. per acre; for the group area "F", consisting of 31,475 acres, the rate of withdrawal for 1941 was 609 m.c.f. per acre; for the area "G", consisting of 32,685 acres, the rate of withdrawal was 518 m.c.f. per acre.

Mr. Culton: For the purpose of clarification, that is for the term August 1, 1940 to July 31, 1941?

The Witness: That is correct.

[fol. 4899] Mr. Culton: All right. Now, your other figures are from August 1, 1939 to July 31, 1940?

The Witness: What are the figures?

Mr. Culton: I thought you were going to give the two years. Didn't you ask for both, the two years?

The Witness: Did you want the two years?

Mr. Littman: I want those for the preceding year.

Mr. Culton: That would be from August 1, 1939 to July 31, 1940, wouldn't it?

The Witness: Yes.

Well, it will not be necessary to call those acreages again, will it?

Mr. Littman: No, let me make this suggestion, Mr. Hintón, would you mind preparing a table which will show the production-per-acre figures that are included in your working papers?

Mr. Culton: Couldn't he just add those seven figures to this and he will have it in the record all in one place. If he now gives that from the summer of 1939 to the summer of 1940, you will have it all there.

Mr. Littman: Yes, but you have other years, do you not? Your study includes what years?

The Witness: From August 1, 1935 to July 31, 1941, inclusive.

By Mr. Littman:

Q. I see. Now, do you have a breakdown of those [fol. 4900] figures, which would show the production-per-acre of Panhandle Eastern's acreage?

A. For those years?

Q. For those years.

A. No, I will have to prepare that because it would be in this file if I had it, because this is a group area summary file.

Q. You have heretofore made such a study, have you not? A. Yes.

Q. Will you prepare a statement for each of these years, 1935 through 1941, showing both the production-

per-acre figures for the Panhandle Eastern's own acreage and for the total acreage in each of the sections of areas?

A. I think that would probably be a very good idea, because there is one thing on the summary of these group areas that I think should be brought out and that is to show that the recovery or withdrawal per acre has practically doubled from July 1935 up to July 1941 in these areas. I believe that I would like for you to have that, so that you will understand that there is a problem there in keeping in step with the general change of the rate of withdrawal in these areas.

Q. Very well. We will appreciate it if you will furnish us such a statement; Mr. Hinton, at your earliest convenience.

Now, how did you apply and use those figures of withdrawal per acre in arriving at the figures shown in Schedule [fol. 4901] rule 5 of Exhibit 43?

A. By the information that was assembled it was possible to show approximately what pressures we would be able to expect in each of these group areas through the various years. The pressure, of course, is the key to the amount of gas that a well will deliver into the pipeline system.

Q. Now, can you give us a specific example of how you applied the figures of withdrawal per acre in arriving at this? Did you make a mathematical calculation?

A. Yes, I have made many mathematical calculations.

Q. Now, for instance, let us say, in one of those areas you had an average withdrawal for the year 1939-1940 of, let us say, 500 m.c.f. Now, what did you do with that figure? That is what I am trying to find out.

A. I took that figure and applied it to the number of acres that we had and from that answer I could tell whether we were in step with the field, whether our rate of withdrawal per acre was high or whether it was low.

At the same time I kept in mind that up to date we had not obtained as much gas for the pressure drop in our acreage as had been obtained from the field as a whole. Therefore, that threw us behind in what we should have obtained for the present field pressure. In keeping that

in mind it is my intention to reverse migration of gas eventually, that is gas that has formerly migrated from [fol. 4902] our leases to others, to take a rate of withdrawal that it will enable us to take because the flow will be reversed and we will get back what we have lost to date.

Trial Examiner: Is there a prospective development for oil which might affect your future problem in this regard?

The Witness: Not in the Panhandle field. In the Hugoton field there is a prospect.

Mr. Culton: These areas have already, heretofore, been tested?

The Witness: Yes. Now, there are new wells going down in proven areas.

Mr. Culton: But other areas than these, "A" to "G"?

The Witness: They are well defined.

Mr. Culton: That is the question the Examiner had in his mind, whether these particular areas have already, heretofore, been tested for oil and found non-productive.

Trial Examiner: And we might add to that inquiry whether or not the gas is being processed for casinghead gasoline as actively as it was in the past years or in the earlier development of the former Pampa field.

The Witness: No, my remembrance is that it was only a small part of what it was originally.

Trial Examiner: Does that affect your problem, that fact?

[fol. 4903] The Witness: Yes, it does in this respect, that if there were, at the present time, being the same amount of so-called casinghead gas processed as there was in former years, why then our expectant recovery would be diminished by the volume that was being processed. You will note that I named that "so-called casinghead gas".

Trial Examiner: Yes. Does the rule of practice of the Texas Railroad Commission in any way affect that sit-

The Witness: It does.

Mr. Culton: In what way? Explain that.

The Witness: The gas-oil ratio has been set. That was formerly neglected.

Mr. Culton: In other words, formerly there was no limit to the amount of gas to be produced with one barrel of oil, whereas now there is a limit?

The Witness: That is right. I think they have done a very good job on their gas-oil ratio work.

Trial Examiner: Well, that is tending to conserve your reserve?

The Witness: That is correct.

By Mr. Littman:

Q. Mr. Hinton, who drew the boundaries of these group areas referred to as "A" and "G", inclusive?

A. I did.

Q. And what governed the establishment of those [fol. 4904] boundaries?

A. Two things, areas of like operating pressure on the pipeline system and areas of like productive areas, that is, wells of similar size.

Q. Yesterday we were discussing the so-called principles and assumptions upon which you based your study, comprehended by Exhibits 42 and 43. One of these is No. 5, which appeared at the bottom of page 6, entitled, "As the Panhandle Field Declines the Company must look more and more to its reserves in the Hugoton Field".

Now, on page 7 you make the following statement: "The Panhandle field will not be a one-horse shay, it will not suddenly cease producing, but in my opinion its decline in productivity will be an ever-increasing rate."

Will you tell us what you mean by that statement?

A. I mean by that statement that we take the data on the field, that is the pressure records, and the amount of gas that has been withdrawn, and we find that there is a tendency there that when we apply the weighted average pressure of the field to the amount of gas withdrawn

er number of pounds to produce the equivalent amount of gas.

Q. Now, looking at Schedule 5 of Exhibit 43, again, I thought perhaps your statement had reference to the fact that Panhandle Eastern, for example, was not going to be able to produce as much gas in the latter part of the [fol. 4905] 15-year period as in the first part of the 15-year period shown in that schedule.

A. Yes sir, I believe the schedule showed that quite clearly.

Q. And that is what you had reference to, that kind of performance?

A. No, I mean that where a well in this area is now producing, say, a million-feet-per-pound drop, just for example, that as the field further declines it will take two pounds to produce that same million.

Mr. Culton: A two-pound drop?

By Mr. Littman:

Q. Well now, speaking of the time elements, what would you say with respect to the time required to get the gas out in the latter period as compared with the present period?

A. It would take a great deal longer.

Q. In other words, you had that in mind as well as the increase in the drop of rock pressure per unit of gas produced?

A. It will take a great deal longer and it will be impossible to obtain the same amounts, because it wouldn't be there to obtain.

Q. Well, even if it is there to obtain, I understand your testimony to be that it will take a longer period of time to produce it.

[fol. 4906] A. That is correct, Mr. Littman, it will.

Q. In the latter period than in the former?

A. Yes, sir.

Q. And is that true, generally, of gas fields whose life has expired and whose performance can be viewed in retrospect?

A. With the exception of a gas field that has a water or oil drive.

Q. Well, there is no such thing present in the Panhandle field, is there?

A. No, but answering your question as to all gas fields, yes, they would have to be included.

[fol. 4907]

C. H. HIXTON, a witness, having been previously duly sworn, resumed the stand and testified as follows:

Cross-Examination (Continued)

By Mr. Littman:

Q. On Page 7 of your Exhibit 42, you state the following so-called principle and assumption:

"The Panhandle Field is a highly competitive one and one of varied producing characteristics," do you not?

A. Yes, sir.

Q. On that page, you state that "a production engineer charged with the duty of obtaining from his company's reserves production of given volumes at any time is faced with many major problems, particularly is this true in the Panhandle Field."

Why is this particularly true of the Panhandle Field and what do you mean by that statement?

A. In order to obtain a given volume at a given time, it is necessary that development must be carried on that is considerably in excess of the average daily requirement for the company and the fact that it is necessary to develop and drill wells in excess of the average daily requirement with a load factor similar to the one of Panhandle Eastern, it means that so much acreage must be developed that it is difficult to compete with the withdrawal of other companies with higher load factors.

Q. Is that condition one that is peculiar to the Panhandle Field?

A. Yes, I would say that it is, for this reason:

That the heaviest withdrawal is taken by pipe line companies and the carbon black industry, all of which

have a load factor much higher than Panhandle Eastern load factor.

Q. Now, is it your plan, Mr. Hinton, to so operate your production system so that you will receive in the future at least the share of the reserves in the field as are represented by Panhandle Eastern's holdings of acreage in the field?

A. Yes, at least that amount and, desirably, greater amounts.

Q. As you indicated this morning, you are going to endeavor to get more than your share and expect to do so?

A. Not more than our share over the entire picture, but more than our share if production would be started from the field as of June, 1941.

In other words, in this field if the development were just starting and there was a uniform spacing program in the field, then we would expect only to withdraw at a rate that would compare with other withdrawals, but in the past, we have not withdrawn at that rate.

[fol. 4909] Therefore, our recovery has, to date, from that field indicated that we have a reserve that would be far less than the one that is estimated.

That is, if our reserve would be computed today on a pressure decline base for the amount of gas that has been taken by this company in comparison with the pound decline in the field, why, our indicated reserve would be considerably less than it is.

For that reason, we feel that we have not had our share to date and by stepping up our production to a rate that will be higher than the average of the field, we hope to get back that which we have not gotten up to this date.

Q. Do you agree with testimony of Mr. Rufus Smith, to the effect that Panhandle Eastern's acreage is located in the better portion of the Panhandle Field?

A. I certainly do.

Q. And you are aware, are you not, of the fact that Panhandle Eastern's wells have a 50 percent better average open flow potential than the average of the wells throughout the West Panhandle Field?

A. I do not know just what the percentage is. I know that it is higher than the average.

Q. Does 50 percent sound reasonable to you?

A. Taking the entire Panhandle Field, I would say that [fol. 4910] it would be a reasonable figure.

Q. Mr. Smith shows a comparison of the open flow potentials of Panhandle Eastern's wells with those of the wells in the field in his Exhibit 30.

The schedule to which I just referred is Schedule 5 of Exhibit 30.

I hand you that schedule and ask you whether you have seen it before?

A. I do not believe I have seen it in this form. I think this was taken from the annual reports of the Texas Railroad Commission, the way it is set up here. I believe that it was.

Q. And doesn't that schedule show substantially what I stated a moment ago, that the average open flow potentials of the wells of Panhandle Eastern are approximately 50 percent above those of the average of the field?

A. No, it does not show it to be quite that much, I do not believe—well, it possibly is when you would add them all up. They show to be better at least.

Q. And you would say 50 percent would not be very far off, generally, wouldn't you? Of course, it could be calculated exactly from this schedule but, for purposes of discussion, what would you say?

A. If I were just looking that over, I would say 25 percent.

[fol. 4911] However, if Mr. Smith said 50 percent, he has undoubtedly made the calculation.

Q. Well, the fact is that Panhandle Eastern's wells have a much higher open flow potential than the average of the Panhandle Field? A. Yes, sir.

Q. And what effect would that have upon the deliverability of your wells? A. On the deliverability?

Q. On the ability of your wells to produce at least as much, if not more, gas than the average?

A. It would indicate that the ability of our wells to deliver gas would be in excess of the average deliverability of the wells in the field.

Q. So that the problem of taking the gas out is not so much a physical one as it is a matter of markets?

A. Not in 1941 or 1942, it is not.

Q. You mean my statement is not correct?

A. I mean it is correct for the present and for the next three or four, I do not remember, six or seven years, probably, but after that time, then it would not be correct, because the problem of getting the gas out would then enter into the production angle.

Q. How?

A. Because the wells would no longer be capable of [fol. 4912] delivering the desired amount of gas.

Q. Well, the wells throughout the field would suffer the same fate, would they not, with respect to ability to produce gas? A. No, sir, they would not.

Q. Why?

A. Because a large part of the gas taken from the Panhandle Field goes to pipe lines that are so designed that they can operate at much lower pressures than our operating pressures, or to the carbon black industry, where it is possible to operate at comparatively low pressure and, of course, the working pressure at the well head governs the amount of gas that that well will deliver, so, if our system was designed so that we could operate at 100 pounds lower pressure or if we had a local market so we could operate at, say, 200 pounds lower pressure, our development problem would be entirely different than it is.

Mr. Culton: Suppose you explain what you mean by "working pressure". I do not think that has been explained in the record.

The Witness: The working pressure is the back pressure against which a well produces gas.

Mr. Culton: In other words, it is the pressure in the gathering line?

The Witness: In the gathering line, or the critical flow [fol. 4913] prover or whatever the apparatus might be upon the well.

By Mr. Littman:

Q. Well, one of the reasons why you suggest the capital expenditures detailed in Exhibit 42 is for the purpose of

reducing those pressures so that you may be enabled to increase your withdrawals?

A. That is correct. If we did not make that capital expenditure, then it would not be possible to take the amounts of gas that are set out in Schedule 5 of Exhibit 43.

Q. Now, when you have made the capital expenditures and installed the facilities contemplated by Exhibit 42 under the anticipated load, you will then be withdrawing at least, if not more than, your prorata share of gas in the field, will you not?

A. Well, until such time as the pressure in the field declines to the point where it is possible for the short distance local market pipe lines and the carbon black industry to go ahead and take their present rate of withdrawal, but at such time it will no longer be possible for us to go ahead and take our present rate of withdrawal without spending tremendous sums of money to increase our capacity to the point where we will be able to operate wells at a comparable pressure.

Q. When do you expect that to occur?

A. I think that we will have a drop-off in our deliverability to the point where we will no longer be able to maintain 60 billion a year, about 1948.

[fol. 4914] Q. Then in 1949 you would expect to withdraw 55 billion cubic feet from the Panhandle Field?

A. That is right.

Q. Then 50 billion in 1950? A. Yes, sir.

Q. Then 45 billion in 1951? A. Yes, sir.

Q. And so forth, isn't that right? A. Yes, sir.

Q. As shown by totaling Columns B and C in Schedule 5 of Exhibit 43?

A. Of course, that does not mean that that will be to the M.e.f. as set out there, because it would be impossible for anyone to make that accurate an estimate of what can be withdrawn, but I do believe that those will be fairly close to the figures which we will experience.

Q. Now, on Page 9 in your written testimony set forth in your Exhibit 42, you make the statement at the end of the first paragraph as follows:

"It is doubtful whether the true equilibrium pressure has ever been ascertained at any date subsequent to the time production was first commenced."

Why is that a fact?

A. The application of known mathematical formulas [fol. 4915] applied to equilibrium pressures would not give the result that we obtain by that application on the weighted pressures which we have.

Q. Now, what particular equilibrium pressures are you referring to here in this statement? Those of the Texas Commission?

A. Yes, sir, those are the Texas Railroad Commission's annual weighted pressures as shown on their pressure maps and published in the annual reports.

Q. And, in your judgment, those are not absolutely correct and true equilibrium pressures?

A. I feel that they are as true and correct as it is possible to get an equilibrium pressure on that field, taking into consideration the well spacing and the distance between wells.

Mr. Culton: Mr. Littman, I think it is fair to the Railroad Commission to state that they do not contend that those weighted average figures represent the equilibrium pressures.

Mr. Littman: I so understand, Mr. Culton, and I wanted the record to be clear.

Mr. Culton: Yes.

Mr. Littman: That it was not necessarily a matter of any errors on the part of the staff of the Texas Railroad Commission but, by reason of the inherent nature of the problem itself.

Is my statement generally correct, Mr. Hinton?

[fol. 4916] The Witness: Yes, I am glad that it was brought out that no criticism was being made of the Texas Railroad Commission.

By Mr. Littman:

Q. Well, can you state what isobaric intervals are used by the Texas Railroad Commission for purposes of determining the equilibrium pressure?

A. Yes, sir. The isobaric interval used on the annual pressure maps is 50 pounds.

Q. And, of course, those are the ones that you used?

A. Yes.

Q. Isobaric intervals of 10 pounds would be more accurate, would they not?

A. It is all according to what scale map you were working on.

Q. All things being equal, Mr. Hinton?

A. All things being equal, I think there would be a slight advantage there to use the 10-pound interval, although I have tried it in several cases on 20 pounds against 50; and the results are very close, because when you start to draw your 10-pound or your 20-pound interval, you are still at a loss to know where that line should be drawn.

Q. But all things being equal, you would get a more exact result by using the 10-pound isobaric interval, would you not?

A. Well, possibly a slightly more accurate result, but I [fol. 4917] do not think that the increase in accuracy would be worth the extra work.

Q. Now, will you state briefly the reasons why the true equilibrium pressure cannot be obtained for the Panhandle Field? I believe you undertook to do that but I do not think you gave us very much detail on that subject.

A. I do not think that it can be reached, because no one knows what lies away from the well bore, any more than the result of production indicates and, in order to reach a true equilibrium pressure, it would be necessary to know exactly where the pressure line would be placed and the reason that an equilibrium pressure is difficult to reach in the Panhandle Field is due to the fact that there are, in many cases, several thousand feet between wells, some of it running into miles, and it all depends on what the pressure is in that area between the wells, how much the pressure gradient is before it is possible to draw in a pressure contour line correctly.

The fact that there is the great variation in pressure from one edge of the field to the other governs the rate of flow of that gas from areas of higher pressure into areas of lower pressure that will work very closely on the ratio of the difference of absolute pressure squares.

That is, if we have an area of 400 pounds and we square that down to 300 pounds, the difference in squares between 300 and 400 pounds will be approximately the same as the [fol. 4918] difference in the squares between 300 and 250 pounds.

I do not know, I haven't worked them out, but it will be approximately that. Therefore, the rate of migration is governed by the pressure and in drawing in the pressure contours, it will be necessary that every bit of this information be taken into consideration.

However, regardless of the care that you give the application of the theory of the difference in squares, it still would depend upon the formation and unless you knew exactly that we had the same permeability, we would still have a problem confronting us, which we do.

Q. Now, Mr. Hinton, on the next page, namely, Page 10 of Exhibit 42, you have set forth a table in which you show in the third column the pressure loss in pounds over the Panhandle Field for various periods from the beginning of the field down to August 1, 1940, do you not?

A. Yes, sir.

Q. And those pressure losses were taken from the reports of the Texas Railroad Commission, were they not?

A. The pressures were and I believe that production also includes an estimate of unmetered gas as well as metered gas.

Q. I was confining my question to information on the present pressures.

A. Yes, they are Railroad Commission pressures.

[fol. 419] Q. I gather from your testimony that there is a certain amount of tolerance inherent in the figures of the Texas Railroad Commission?

A. Yes, I would say that there would necessarily have to be, on an area of this magnitude.

Q. And the area reflected in these figures in the table shown on Page 10 of Exhibit 42 embraces the entire Panhandle Field, does it not?

A. Yes, sir.

Q. Both east and west? A. That is correct.

Q. Within what limits would you say that these figures shown in Column 3 headed, "Pressure loss in pounds" are accurate for all practical purposes?

A. It would be very difficult to name a percentage of error in that figure, but I think it would be comparatively low, due to the fact that it would have the tendency to be a compensating error, rather than an error of multiplication.

Q. Well, would you say that the degree of accuracy would be within one pound or two pounds or what?

A. I think that it could easily be within one pound.

Q. That is, one way or another, either up or down?

A. Yes.

Q. For each of the figures shown in the five columns?

A. That is true.

[fol. 4920] Q. Headed, "Pressure loss in pounds"?

A. Yes.

Q. Now, Mr. Hinton, in your direct testimony, you discussed your capital additions for the basic and for the anticipated load, but there are certain items that you did not discuss in detail, and I want to go through some of them for our information.

Will you please turn to Page 26 of Exhibit 42 on which page you start your list of capital additions to provide for the anticipated load from June 30, 1941, through 1946.

You won't need to refer to the basic load figures which appear from Page 21 to Page 25, inclusive, because the anticipated load figures embrace the basic load figures, do they not?

A. Yes.

Q. Now, looking at Page 26, have all of the capital expenditures listed on that page been made in the last six months of 1941 which have expired since you last testified in this proceeding?

A. They all have been made with the exception of the drilling in of the well located near Guymon, Oklahoma, in Hugoton Field, Oklahoma.

Q. Is that well now being drilled?

A. It has been drilled and the production string of casing has been set. I just talked to the office at noon and they have had 17 below zero weather out there and they are shut down.

[fol. 4921] They have not torn down the rotary rig yet.

Q. When will that well be completed and in service?

A. As soon as it gets warm enough that the water won't freeze. Probably we can pick out a few warm days through January or February to complete it.

Q. Have you purchased the new automobile listed on Page 26 as Item "e"? Fortunately, we have.

Q. Now, is this new automobile purchased to replace one that had been traded in?

A. No, sir. If that had been, it would not have been a capital expenditure. It would have been an operating expense. Q. You did not trade an old automobile on this new one, did you? A. No, sir.

Q. Now, throughout your capital expenditures for the anticipated load, you, I think, have some other automobiles and trucks?

A. That is right.

Q. That are expected to be purchased?

A. Yes, we hope.

Q. Well, did you expect to retire some of your automobiles and trucks during the next five years?

A. Certainly. We will retire them, but they will be [fol. 4922] immediately replaced by other equipment, by similar equipment. When you say "retire", do you mean to reduce the number of automotive units?

Q. I mean to retire an automobile from service, to trade it in on another one or to sell it or dispose of it because of its age.

A. Yes.

Q. You do expect to lose some automobiles, in other words, between now and the end of 1946?

A. Certainly.

Q. Due to wear and tear and so forth? A. Yes, sir.

Q. Have you made any deduction from your capital additions for the automobiles that are going to be retired from service?

A. No, because they will be replaced by similar units: as soon as one unit is retired, that will be replaced by another like unit.

Q. You have not included in these figures in Exhibit 42 the units that will be purchased for the purpose of replacing those that are retired?

A. No, sir.

Q. In other words, the automobiles and trucks that you include in your exhibit are only additional units?

A. That is true.

[fol. 4923] Q. Is that correct? A. Yes, sir.

Q. Now, in 1942, which is shown commencing on Page 25, you have an item shown as "b. Install liners in two old wells in the Panhandle Field."

Do those old wells now have liners?

A. No. If they did have liners and we had these two liners in the budget, it would not be a capital expenditure. It would be a maintenance item.

-Q. Now, throughout the entire exhibit, you have a number of—well, I mean throughout that part of this exhibit which relates to these capital expenditures, you have numerous provisions for installation of liners.

Are you stating that in each and every instance where you have made a provision for a capital addition for the installation of liners, that those are not for the purpose of replacing or renewing old liners, but will be installed in the wells for the first time?

A. Yes, sir, everything is an addition and not a replacement that is included in this list.

Mr. Culton: Pardon me, I wonder if it would not be advisable at this point, so the record may be clear, to explain the difference between a well using liner and tubing and the wells as they have heretofore been operated without liner and tubing.

[fol. 4924] Mr. Littman: Very well.

The Witness: The reason that we have included liners in our future capital expenditures is due to the fact that, as pressure becomes lower in the field, it is more difficult to clean the well bore by blowing the well to the atmosphere, and in order to keep out all cavings possible from the well bore, these liners are installed.

A liner is merely a piece of pipe of small enough diameter that it can be lowered down the production string. The slots are either cut in rectangular shape, triangular shape, or in circles, and these slots permit the gas to feed into the well bore and at the same time hold back the cavings.

What else?

Mr. Culton: The tubing.

The Witness: A well that is tubed can be produced either through the tubing or if no packers are set, it can be produced through the old production string and in event that it is produced through the old production string,

why, the tubing merely acts as a syphon and is usually placed within two or three feet of the bottom of the well to take off the water from the well bore with the least waste of gas.

Mr. Culton: On your new wells, what is your practice as to liners and tubing?

The Witness: We do not complete a well in the Panhandle Field without a liner.

[fol. 4925] Mr. Culton: That is on the new wells?

The Witness: On the new wells, unless it is a large well and the flow will not permit us to install a liner. I am afraid we are not going to have many more of the type that we will not be able to install liners.

Mr. Culton: Pardon me for interrupting, but I thought that distinction might be pointed out.

By Mr. Littman:

Q. Now, in the year 1942, as shown by Item "c", you have made a provision for the installation of tubing in various old wells in the Panhandle Field, and I believe in the Hugoton Field, as well?

A. No, we have no tubing in 42 in the Hugoton Field.

Q. Is this all new tubing, or is it tubing that is installed to replace old tubing?

A. We do not have tubing in any well at this time in either field. The item "c" install tubing in two old wells in Panhandle Field costing \$4,262" should be revised, because we have changed our mind about those two wells since this was made, and instead of running tubing in these wells, we intend to run another production string because we have studied the problem a little more thoroughly, and one of those is on the State Permit 1-106 well, and we feel that by running another production string, that we are going to be able to cement off water that is now coming into the well from above.

[fol. 4926] The other is for our Sneed 1-23 well; and we have had samples of water analyzed and find that the analysis of the water indicates that it is coming from above, rather than from two old abandoned holes which we thought was the source of the water in this well, so

rather than to take the last resort on this Sneed 1-23 well, we are going to—

Mr. Culton: (Interposing) What would be the last resort?

The Witness: Tubing—we are going to run a production string and see if we cannot yet save that well and get more production than we would by tubing.

By Mr. Littman:

Q. Would that increase or decrease your capital expenditure?

A. That would at least triple that item.

Mr. Culton: By that, what do you mean?

The Witness: It would be in excess of \$12,000 instead of \$4,000.

Mr. Culton: All right. The cost would be in excess of \$12,000 instead of \$4,000, the two wells together?

The Witness: Yes, sir.

By Mr. Littman:

Q. And would that \$12,000 all be classed by Panhandle Eastern as capital addition?

A. Yes, I think it would, because it would be material that would be used in the further completion of this well. [fol. 4927] In other words, if we would have drilled that well and encountered the trouble at the time of the drilling, it would have been necessary to run another string of pipe, and that has happened on many wells in the Panhandle Field.

Therefore, I think it justifiable to include it as a capital expenditure.

Q. The next item you have is Item "d Acidize five old wells in Panhandle Field," costing \$7,750. Have these five old wells been acidized before?

A. No, sir.

Q. This will have been the first acidizing operation?

A. That is correct. If they would have been acidized previously, that would be a maintenance item.

Q. Now, Mr. Hinton, throughout this study of future capital expenditures, you have numerous items similar to Item "d," which I just read and which we just discussed.

Are all of these acidizing operations comprehended by this exhibit those which are being made for the first time?

A. There may be one or two exceptions to that. I do not quite remember. What I mean by exception is, that in the years gone by, meaning the last three or four years, sometimes upon the completion of a well, we merely put in a treatment of acid which we term as a wash shot.

That is to clean out the well bore and make the well somewhat easier to maintain, but not with the thought of getting the ultimate increase in the open flow of that [fol. 4928] well and in that case where we put in the final shot, that is listed as a capital expenditure.

I am not sure whether there are or there are not some of those wells included.

Q. It is your testimony, then, that all of the acidization operations comprehended by your Exhibit 42 are those which will be charged to capital by the Panhandle Eastern?

A. I feel that everything included is a justifiable capital expenditure.

Q. Have you discussed the matter with the accounting staff that determines how matters of this kind shall be charged?

A. Yes.

Q. And they so advised you? A. Yes.

Q. Now, Item "e" on Page 27 is, "Lay well lines for five wells in Panhandle Field", costing \$15,395. Will you state how many feet of well line you include for each well and the size of the pipe?

A. I would if somebody did not have File No. 32 of the working papers out.

[fol. 4929] By Mr. Littman:

Q. Are you now prepared to answer the question I put to you just before the recess?

A. That was concerning item "e" on page 27 of Exhibit 42.

Q. That is right?

A. Yes, there will be 475 miles of 4-inch pipe required to connect those five wells.

Q. Now, on page 27 of your Exhibit 42 you have an item listed as item "h", called "Increased capacity of present gathering line by looping existing lines and additional gathering lines costing \$422,464". Will you state [fol. 4930] the breakdown of this line as to sizes of pipe and lengths and location?

A. I believe that I can give that correctly. It was given yesterday in yesterday's testimony. If I go ahead and give you those figures now and check them against the work sheets, then will it be permissible to make any necessary correction on the amounts?

Q. It will be satisfactory for you to correct your present figures, if you should find them incorrect.

A. That includes the looping of the present line commencing at the intake side of the Sneed compressor station and extending in a southwesterly direction for a distance of 2.7 miles.

Q. You have a legend on Exhibit 45 which would be helpful.

You may proceed with your explanation.

A. The 2.7 miles of pipe just described commences at the intake side of the Sneed compressor station, which is located on the western portion of the Basemore Survey, Moore County, Texas, and extends in a southwesterly [fol. 4931], direction 2.7 miles. The size of this line is 26 inches o.d.

Q. Outside diameter? A. Right.

Q. That brings us to a point where the present 18-inch line coming in from the southeast and the present 20-inch line coming in from the southwest join. Isn't that point called Windmill Junction?

A. Yes. I can't make it out on the map, or I would identify that section number.

We then expect to loop from Windmill Junction in a southwesterly direction to a point on the system known as Zofness Junction, which is located in Section 29, Block 6-T, T. and N. O., Moore County, Texas.

Q. Will you give us the distance of that last connection?

A. I believe that distance is eight miles and it is to be 24-inch o.d. pipe. From the described point of ending of this line it is then planned to loop the present 12-inch line, which is directly west of said point, for a distance—I can't recall that distance but it is to the point where the present system is enlarged to 16-inch pipe. That will be 20-inch pipe.

Q. You can give us the approximate distance, can you not, Mr. Hinton, each square being a mile?

A. It looks to be 6.33 miles.

From that point in an almost straight westerly direction [fol. 4932] it is planned to loop the present 16-inch pipe line with another 16-inch o.d. pipe line to a point near the center on the north line of Section 25, Block 44, H. and T. C. Survey, Houston, Texas.

I believe that that is all of the major looping that was included in that.

Q. That takes care of the gathering line from Zofness to Sneed by looping, does it not?

A. And, also, to the west of Zofness out near the extreme end of the present system, the extreme west end of the present system.

Q. Now, you, also, refer, in your description of that item on page 21, to certain additional gathering lines to serve new roads. Have you described that gathering line or those gathering lines? In other words, I would like to have the balance of the facilities embraced by this item.

A. There is an additional gathering system which commences at the center of the north line of Section 28, Block 44, H. and T. C., and extends southwestwardly approximately one mile to the center of Section 29, Block 44, H. and T. C. This will be 8-inch i.d. pipe.

Q. And what is the length?

A. Approximately a mile.

Q. Are there any other facilities embraced by this item. A. Not gathering lines.

[fol. 4935] Q. Well, have you described all of the items included within the item "h" on page 27, for which you expect to expend the sum of \$422,464?

A. No, I do not believe so. That is all I see here at the present time and it will bear checking when I get the work papers.

Q. You will check the matter when you get your working papers and report any additional facilities, if there are any?

A. Yes. It seems to me that it would be much better if we could wait until those working papers do get here, because it would save us the time of repeating this, if that would be all right with you, if you have any other thing that you could go ahead with.

Q. I do not believe, Mr. Hinton, that we will have any other situations like this for the year 1942. Let's see how well we can get along.

A. All right.

Trial Examiner: Mr. Hinton, you have been making reference to Exhibit No. 45, have you not, in the location you have just pointed out on the map?

The Witness: Yes.

Mr. Culton: Perhaps you had better clarify that by showing that this construction which you are talking about all has a certain color on the map, does it not?

The Witness: Yes, it is all colored brown.

[fol. 4934] By Mr. Littman:

Q. Before we leave that item, Mr. Hinton, I call your attention to your testimony at pages 716 and 717 of the transcript in which you made the following statement in response to the following question:

"Q. And this is the character of additional gathering line capacity that you think will be needed in this particular situation?

A. It could be taken care of in either manner and we studied both methods of trying to increase our load into Zofness. The design of our pipe line system is such that it is almost necessary to loop the greatest part of it, even if we went to what we might term 'a centralized horsepower' and, therefore, we decided that probably the looping would be better because we would spend about the same amount of money and we would cut down the operating cost at another compressor station, which would be located out near the Zofness Camp."

Q. Did you mean to use the term "centralized horsepower"? A. Yes.

Q. Or decentralized horsepower?

A. That would be termed as "centralized field horsepower". If it was a decentralized system, it would mean that we would take care of each individual well with a small booster, but by centralized that would mean that there would be a compressor station built in Section 29, Block 6-T, N., T. and N.O., Moore County, Texas, and the [fol. 4935] production would come into that station and it would be boosted or the pressure would be increased by that station, so that we could come into Sneed station at a higher intake pressure.

Trial Examiner: May I ask a question, Mr. Hinton, about the mechanical factors in the production of gas? I assume when you go into a new field and bring in a new well in a newly constructed gathering line, the gas would come into the newly constructed line, we will say, at the rock pressure which might range upwards of 400 pounds per square inch.

The Witness: It will be all according to the type of well and what volume of gas you want to take from the well. For instance, a well in the Hugoton field of Kansas that was drilled at a virgin pressure of between 435 and 445 pounds and operated at 400 pounds would not deliver the same amount of gas by any means that a well in the Panhandle field that was drilled at virgin pressure and operating against 400 pounds would deliver into the line. It would vary in each field and that is what I am trying to bring out.

Trial Examiner: That is by reason of the different rate of production due to difference in permeability of formations?

The Witness: Yes.

Trial Examiner: All right. Now, your well, we will say, continues to feed into a gathering line at an assumed [fol. 4936] pressure of upwards of 400 pounds per square inch, continuing until that pressure drops. The problem of pressure is not a problem for you until the pressure becomes less than the pressure you desired to maintain in your line, is that true?

The Witness: That it true.

Trial Examiner: And what then happens?

The Witness: There is one of two things which usually happens and that is that the well ceases to produce gas or there is horsepower installed to aid in delivering gas into a pipe line.

Trial Examiner: Now, in what way does the use of compressors aid the induction of gas into the pipe line?

The Witness: It lowers the pressure against which the well is forced to produce its gas.

Trial Examiner: So that instead of a pressure against which the new gas has come, you are approaching a vacuum condition or a lessened pressure?

The Witness: A lessened pressure, but considerably far from a vacuum.

Trial Examiner: Will you ever reach the point where there is an actual vacuum beyond your entrance valve?

The Witness: No.

Trial Examiner: That is impractical?

The Witness: That would be very expensive.

Trial Examiner: So that you are simply taking advantage of the natural pressure and that can not be assisted from a practical standpoint?

The Witness: No.

Mr. Culton: Mr. Hinton, I am wondering if the Examiner's questions couldn't be amplified on by explaining the difference between the use of field compressor stations and the centralized plant about which you spoke? In other words, in one of them you take the gas immediately at the well, do you not, and boost its pressure in the field compressor station, but in the centralized station you put on something in the nature of a suction at the gathering point?

The Witness: Well, it is just a matter of assembling the horsepower in one place or scattering it out of the field.

Mr. Culton: But one pushes and the other pulls. That is the ordinary way of saying it, isn't it?

The Witness: Well, that is the ordinary way of saying it, but it is erroneous because you never—

Mr. Culton: (Interposing) Never get down below zero, I understand.

The Witness: No, you never actually suck gas. All that happens is that the pressure is lowered to the point where the gas of the higher pressure will flow to the area of lower pressure.

Mr. Wheat: Mr. Hinton, is it possible that the Examiner had in mind the fact that there have been some gas [fol. 4938] fields in which they have said they were pulling against a vacuum? That is not true in the Panhandle field and, in your opinion, will not be true, commercially? Is that correct?

The Witness: That is correct.

Trial Examiner: Well, the effect of charging the pipe at the Liberal station at a high pressure, if all valves between that station and the field were open, would, to a certain extent, be the effect of suction back of the compressor, would it not?

The Witness: Well, when you speak of suction, I am thinking of something that has a direct pull.

Trial Examiner: Well, doesn't it have that very thing?

The Witness: No, sir.

Trial Examiner: In order to produce your volume of gas under the high pressure?

The Witness: No, sir, I don't think that it does. It just merely lowers the pressure so that there is a pressure gradient which is efficient to enable the desired volume of gas to flow.

Trial Examiner: In other words, the Liberal compressor station does not accomplish more than to remove the resistance?

The Witness: That is correct.

By Mr. Littman:

Q. Item "p", shown on page 27, is an item for the construction of the Cimarron River crossing for loop line, [fol. 4939] costing \$220,384. Will you please identify on your map, Exhibit No. 46, the Cimarron River crossing and give us the number of the line and the location by section number?

A. Well, the location of that river crossing will be, in all probability, Section 26, Township 33, Range 32, Seward County, Kansas.

Q. The Cimarron River is not shown on that map.

A. No, it is not.

Q. And what is the number of the line?

A. It is four 16-inch lines and I don't know what you mean by "number". To what number do you refer?

Q. Well, what is the loop line number?

A. I don't know.

Mr. Culton: You refer to the accounting practice, don't you?

Mr. Littman: I understand these lines have certain numbers.

Mr. Culton: That is for accounting purposes on the accounting records.

The Witness: No, for operation, also.

Mr. Culton: Are they?

The Witness: Yes, sir.

By Mr. Littman:

Q. But you do not recall the number?

A. I do not recall what it is.

[fol. 4940] I might add that the result that may be obtained by the installation of the river jetties may have something to do with the location or the relocation of the proposed river crossing.

Q. Now, on page 28 you show an item "r", the construction of the gathering line from Section 31, Township 4 to near Optima in Texas County, Oklahoma, at a cost of \$324,180.

A. -That is correct.

Q. What is the size, length and location of that gathering line?

A. That will be a 22-inch o.d. line, the distance will be approximately 15 miles and it will leave the present 22-inch line in the southeast quarter of Section 31, Township 4, Range 19, Texas County, Oklahoma, and extend west to the approximate center of the south half of Section 34, Township 4, Range 16 west.

Q. Now, your next item on that page is item "s", "Construct gathering line in Oklahoma connecting with the Optima line at a cost of \$856,606".

A. That is right.

Q. At which point will the latter line connect with the one which you just described?

A. Near the center of the south half of Section 34, Township 4, Range 16.

Q. Now, will you please give a description of the gathering line embraced by item "s"?

[fol. 4941] A. The first gathering line will extend from the center of said Section 34 in a south and slightly easterly direction, a distance of approximately $7\frac{1}{2}$ miles, and it will be 12-inch i.d. pipe.

The next line will start from the same point in said Section 34 and extend in a southwesterly direction a distance of 8.4 miles to a point in the approximate center of the northwest quarter of Section 12, Township 2, Range 15, Texas County, Oklahoma. At that point this gathering line reduces from a size of 16 o.d. to 12 i.d. pipe and extends to a point in the northwest quarter of Section 4, Township 1, Range 15, a distance of 5.8 miles, thence in a westerly direction slightly south this pipe is extended with 10-inch pipe for a distance of 6.3 miles to a point in the southwest quarter of Section 9, Township 1-14, thence in a westerly direction the extension is made with 8-inch pipe for a distance of 6.1 miles to a point in the southwest quarter of Section 9, Township 1-13 west, all in Texas County, Oklahoma.

Q. Now, that completes the branch that runs from the central point that you gave a moment ago as south and then west. Now, I notice some other branches on the map.

A. We again start near the center of the south half of said Section 34-4-16 and extend in a northwesterly direction with 16-inch, o.d. pipe a distance of 16.7 miles. [fol. 4942] The size of the pipe is here reduced to 10-inch and extends in the same general northwesterly direction, a distance of 4.6 miles.

Q. (Interposing) Will you give us the point on the map?

A. Yes. That is from the center of Section 36, Township 5, Range 13 and 10-inch pipe extends to a point near the center of the northwest quarter of Section 20, Township 5, Range 13.

Branching off from the 16-inch line, heretofore described, at a point near the center of the north half of Section 5, Township 4, Range 14 and extending in a northerly and slightly easterly course to a point near the center of the southeast quarter of Section 29, Township 5, Range 14, a distance of 1.6 miles, there will be laid a 6-inch line.

Q. Now, is that called a gathering line?

A. Yes. A gathering line is a line that serves more than one well.

From a point near the southwest corner of Section 7 another gathering line takes off of the 16-inch line and runs in a northeasterly direction to a point near the center of Section 6, Township 4, Range 15 west. There this line divides and a branch runs to the northwest which will be 8 inches inside diameter and this will extend to a point near the center of the south half of Section 25, Township 5, Range 14 west, a distance of approximately 1.7 miles.

The other branch from the end of the 10-inch line located near the center of the north half of Section 6-4-15 will extend northeasterly to a point near the center of the southwest quarter of Section 28, Township 5, Range 15.

There is, also, another line that takes off from the end of the 22-inch trunk gathering line that will start near the center of the south half of Section 34, Township 4, Range 16 west and extend in a northeasterly direction a distance of 5.0 miles and this pipe will be 16 inches, o.d.

At the end of the 16-inch line, which is in the northeast quarter of Section 12, Township 4, Range 16, a line will extend almost due east to a point in the northwest corner of Section 12, Township 4, Range 17, a distance of approximately 5.3 miles.

Then, from the end of the same 16-inch line there will be a line that will extend in a northwesterly direction to the center of Section 8, Township 5, Range 16, a distance of approximately 6.8 miles and this line will be eight inches inside diameter.

I believe that completes the description of all the gathering lines.

Q. Does that complete the description of all of the facilities embraced within the item "s" on page 28?

A. I believe that it does, Mr. Littman.

Q. Well now, you may, of course, check your answer later and supply any corrections or additions, if you wish, [fol. 4944] but I am very anxious that you do that so that we may know that if you don't have any corrections later that we may rely upon the testimony and description.

A. Well, we know that there will be corrections because I am not that good at scaling.

Q. Those distances which you have given are approximate, having been measured by you by the scale on the map?

A. And estimated in most cases.

Q. Now, in this exhibit you used the term "well lines" and "gathering lines". A. Yes.

Q. You have already defined the term "gathering lines" as used by you. Now, will you define the term "well lines" as used by you in this exhibit?

A. A well line is a pipe line that is used to transport gas from the well to the gathering line.

Q. And the well line serves only one well, does it not?

A. Except in rare cases where a location is drilled that was not planned in the development and then sometimes the well line to the original well is extended to the other well but it is still carried on the books as a well line.

Q. Well, is there any such exception in your Exhibits 42 and 43? A. No, sir, there is not.

Q. You see, this is important for us to know so that we [fol. 4945] may make certain that we understand precisely what lines are included within each of these items.

A. Yes. I think it would be helpful for you to have that detailed information and as soon as the photostatic sheets arrive here, if the other file doesn't turn up, why, that will be furnished.

Q. Very well.

Now, your next item "t" on page 28, "Construct well lines for 20 new wells costing \$47,610", can you give us the total length of pipe and the sizes of pipe for each length? I meant to say on the length of each size of pipe for these new wells.

A. I can give it to you approximately.

About 14.69 miles, all 4-inch, i.d. pipe.

Q. That is the total mileage for the 20 well lines?

A. Yes, sir.

Q. I should say for the 20 wells and 20 well lines.

A. I wouldn't argue with you about it.

Q. You have an item on page 28 called item "x", "Construct office building at Hugoton Camp, costing \$7,000". A. Yes, sir.

Q. Why do you include this item?

A. Because there is no place for any clerical work out there at the present time.

Q. Don't they have an office building in the Hugoton [fol. 4946] Camp now?

A. Yes, we do. We have two rooms that are approximately nine feet by 10 feet and there are many times 20 men in those two rooms, so you can readily see that there is small chance of doing any of the clerical work required and it is necessary that it be done just whenever enough of the men get out so that it can be done.

During the wintertime operation in that field a large crew is required due to the type of gas that is produced in Hugoton field and it is often necessary that these fellows wait around the office until such time as word is carried back by a chart changer telling them which well lines have to have attention.

Q. Now, looking at the list of capital expenditures contemplated and estimated for the anticipated load for the year 1943, I see that item "e" shows the construction of well lines for five new wells in the Panhandle field at a cost of \$23,335. Will you give us the length of pipe and size of pipe?

A. Yes, sir. The total amount of pipe required is 7.20 [fol. 4947] miles and that is all 4-inch, i.d. pipe.

Q. By the way, were all of the well lines to which you referred as being covered by item "t" in the previous year, 1942, located in Texas County, Oklahoma?

A. Yes.

Q. Do you have the information available for the five wells in 1943 embraced by item "e" as to length of line for each of the five wells?

A. Yes, sir.

Q. You have your working papers here for that?

A. I do.

Q. Will you please read those into the record?

A. For the Purvin-Redmond well, located near the center of Section 69, Block 44, H. and T. C. Survey, that line will extend 20 of 1 mile to a point near the same location, of course.

The Hauneman, located near the center of Section 100, Block 44, H. and T. C. will extend from a point near the center of Section 69, Block 44, H. and T. C., to the well and will be approximately 1 mile in length.

The Kilgore 56 will be located near the center of Section 56, Block 44, H. and T. C. Survey, and will extend to a point near the center of the south line of Section 57, Block 44, H. and T. C., and the total distance will be approximately 1 mile.

[fol. 4948]. The Kilgore near the center of the north half of center Section 57, Block 44, H. and T. C., will extend to a point near the center of the south line of Section 57, Block 44, H. and T. C., and will be approximately 70 miles in length.

The Taylor will extend from a point near the center of Section 5, Block 1, J. P. Survey, and will extend to a point in the southwest quarter of Section 23, Block 1, J. P., and will be a distance of 4.30 miles, making a total of 7.20 miles for the five wells all located in Moore County, Texas.

Q. On page 29 you have item "g." You have an item of construction of additional gathering lines to serve new wells in Panhandle field, costing \$7,815. Will you describe those facilities?

A. Yes.

Q. And give the location.

A. That is a gathering line for the purpose of taking on the Purvin-Redmond well and will extend from a point near the center of Section 69, Block 44, H. and T. C., Moore County, Texas to the south line of Section 58, Block 44, H. and T. C., Moore County. It will be 6-inch i.d. pipe and approximately 1.5 miles in length.

Q. Mr. Hinton, I refer you to item "k" on page 29, which provides for the construction of well lines connecting 10 Oklahoma wells costing \$20,710. Will you give us a description of those well lines?

[fol. 4949] A. Yes, sir. I believe, probably, the best way to identify those would be to mention the farm name and then describe the line. I think it would be about as clear that way as any.

Q. And I think it would be well to point to the map, Exhibit No. 46.

A. The first well line is to the Beer lease and that is located near the center of the south half of Section 20-5-14 and that extends in a southeasterly direction to a point in the southeast quarter of Section 29-5-14. It is a 4-inch i.d. line of approximately 1.03 miles in length.

The Duer is in the center of the south half of 12-4-17 and extends in a northwesterly direction to a point in the northwest quarter of Section 12-4-17, a distance of .47 of 1 mile.

All of these pipe lines will be 4-inch inside diameter pipe, so I won't read the diameter each time.

The third well is the Heimsath. That is located in the center of the north half of 21-4-15 and extends in a northeasterly direction to a point in the northeast quarter of 21-4-15, a distance of .22 of 1 mile.

The Miller is in the center of the south half of 19-2-17 and extends in a westerly direction to a point in the southeast quarter of Section 23-2-16, a distance of approximately 1.30 miles.

[fol. 4950] The Miller—this is the second Miller well—is located near the center of Section 23-2-16 and extends to a point in the northeast quarter of Section 23-2-16, a distance of .40 of 1 mile.

Another Miller well is located near the center of the north half of Section 25-2-16. The pipe line extends to the northwest quarter of 25-2-16 a distance of .42 of 1 mile.

Another Miller well is located near the center of the northwest quarter of Section 36-2-16. The pipe line extends to near the center of line of 25-2-16, a distance of .90 of 1 mile.

The Stamper is located from a point near the center of the west half of 17-3-16. The line extends to a point in the southeast quarter of 17-3-16 and that line is .68 of 1 mile.

Then, the Stratton is near the center of the west half of 18-1-16 and the pipe line extends in a westerly direction to a point on the west line of 18-1-16, a distance of .27 of 1 mile.

The White is near the center of the west half of Section 2-3-16. That line extends in a northwesterly direction to a point in the northeast quarter of Section 20-3-16, a distance of .70 of 1 mile, all being 4-inch inside diameter pipe and all located in Texas County, Oklahoma.

Q. Now, on page 29 you have an item called "n", "Construct additional gathering lines serving new, Hugoton [fol. 4951] wells, costing \$52,710." Will you please describe those facilities?

A. The items under "n," page 29, Exhibit 42, include a 6-inch line which starts in the northwest quarter of Section 4-1-15 and extends in a southeasterly direction to a point on the west line of Section 18-1-16; a distance of .42 miles, the diameter of the pipe being 6-inch i.d.

Q. Does that complete your description?

A. No, sir. It is what is known as the Miller block extension, which begins near the southeast quarter of Section 11-2-16 and extends to the northwest quarter of Section 25-2-16 and that will be a 12-inch line 2.7 miles in length. Both lines described will be in Texas County, Oklahoma.

Q. Now, before leaving 1943, I note that you have a section on your map, Exhibit No. 46, colored in green, which is for the year 1942.

A. Yes, sir.

Q. In Section—

A. (Interposing) 26-4-17.

Q. (Continuing). Called Duer. This patch of green seems to be isolated from the rest of the system. Will you explain what facilities are embraced by that part of the legend?

A. The lease on the Duer well includes the northeast quarter of Section 26-4-17 and by drilling the well on this [fol. 4952] acreage here the entire lease was secured, so that will be secured acreage but not pro-rated acreage at this time because it would be in excess of a 640-acre unit, which is the maximum unit that we use in our proration formulas.

Q. You don't intend to drill the portion colored in green to which I just referred? Isn't that right?

Mr. Culton: You mean during the period that this covers.

The Witness: No, not during the period which this map covers, but that puts us in an excellent position to either trade acreage with some other company that has a similar base to add to ours or to buy adjoining acreage to that.

By Mr. Littman:

Q. Well, you haven't included any facilities for the connection of that lease, have you?

A. No, sir. We will just save \$80 a year in delayed rent.

Q. Now, looking at the year 1944, which commences on page 21 of Exhibit 42, you have an item "e", "Laying well lines connecting five new wells in Panhandle field, costing \$15,071." Will you please describe those facilities?

A. You understand that I do not have my working papers for this year and the description will be approximations which I may correct afterwards.

Q. This is one of the years for which you do not have the working papers?

[fol. 4953] A. Yes.

Mr. Culton: We are in the Panhandle field now. You have the Hugoton but—

The Witness: (Interposing) No, we are over in another year now.

By Mr. Littman:

Q Well, do you have your working papers for the year 1945?

A I believe I have. Yes, I do.

Q Well, let us skip 1944 for the present and go to 1945. I call your attention to an item of "h" on page 30 of Exhibit 42, calling for the construction of well lines to connect 10 new wells at the Hugoton field, costing \$36,234. Will you please describe those facilities?

A Yes. Do you want them pointed out on the map?

Q Not if your description is sufficient for purposes of locating them on the map.

A It is.

You understand that five of those are in the Kansas portion of the Hugoton field and five in the Oklahoma portion of the Hugoton field. The ones which will follow are those that are in the Oklahoma portion of the Hugoton field.

The Chittenden is near the center of the northeast quarter, Section 34-16 and the pipe line extends to a point in the southwest quarter of 35-5-16, 4-inch line 7.1 miles in length.

[fol. 4954] The Fisher is near the center of 32-4-13 and the pipe line extends to a point near the center of 33-4-13, Texas County, Oklahoma, and the length is 1.03 miles.

The Jones is near the center of the east half of 4-3-13 and the pipe line extends near the center of 33-4-13, Texas County, Oklahoma. It is approximately 1 mile in length.

The Wright is near the center of the north half of Section 24-4-16 and the pipe line extends to a point in the southwest quarter of 24-4-16, being .35 of 1 mile.

The Zbinden is near the center of the southwest quarter of 29-4-16. The pipe line extends to a point near the center of the north line of 23-4-16, Texas County, Oklahoma and is 4-inch line, .35 of 1 mile in length, a total of 3.83 miles for the five lines.

The well lines which will be located in the Kansas portion of the Hugoton field are the Collingwood and the line will extend from a point near the center of the north half of Section 5-29-34 to a point in the northeast quarter of 8-29-34, Haskell County, Kansas, a distance of 4.1 miles; the Hayward and Friend extend from a point near the center of Section 36, Township 34, Range 40 to a point near the center of Section 6, Township 35, Range 39, Morton County, Kansas, 1.52 miles; Hoffman and Davis is near the center of 29-28-36 and the pipe line extends to a point in the southeast quarter of 31-28-36, Grant County, Kansas, a [fol. 4955] length of 1.60 miles; the Hooper will extend from a point near the center of the south half of Section 22, Township 30, Range 35 to a point near the center of the north half of Section 10, Township 30, Range 35, Grant County, Kansas, 2.45 miles in length; and the Miller is near the center of 29-28-37 and the pipe line will extend to a point near the northwest quarter of 32-28-37, Grant County, Kansas, a distance of .68 mile, all 4-inch inside diameter pipe and the total of the five wells is 7.35 miles.

Q. Now, the last letter item for the year 1945 is item "j" on page 31, "Construct additional gathering lines to serve new wells in the upper Hugoton field, costing \$135,257." Will you please describe those gathering lines?

A. Yes, sir. There will be two gathering lines in Texas County, Oklahoma, the first being what will be known as the Jones and it will be a line that will start near the center of Section 22-4-13, Texas County, Oklahoma, and extend to near the center of 33-4-13, Texas County, Oklahoma, a 6-inch i.d. line, 2.3 miles in length.

The Wright will be the next gathering line and it will commence in the northeastern quarter of Section 23-4-16, Texas County, Oklahoma and will extend to a point in the southwest corner of 24-4-16, Texas County, Oklahoma. It will be a 6-inch inside diameter line of a length of .60 of 1 mile.

[fol. 4956] In Kansas the following gathering lines will be built: The first will be known as Collingwood and it will commence in the southwest quarter of Section 2, Township 30, Range 35, Grant County, Kansas and extend to a point in the northeast one-quarter of Section 8, Township

29, Range 34, Grant County, Kansas. It will be an 8-inch inside diameter line, 6.3 miles long.

The next will be known as the Ulysses and that will be a line that will commence in the northeast quarter of Section 9, Township 29, Range 36, Grant County, Kansas and extend to a point in the northwest quarter of Section 32, Township 28, Range 37, Grant County, Kansas. This will be a 10-inch inside diameter line that will be 7.6 miles in length.

Q. Does that complete the description of all the facilities embraced within item "j" on page 31?

A. It does.

Q. And that brings us to the end of the year 1945?

A. Right.

Mr. Culton: Except for 1944.

Mr. Littman: Yes.

The Witness: 1944 and the corrections on 1942.

[fol. 4959] C. H. Hinton, a witness, having been previously duly sworn, resumed the stand and testified further as follows:

Cross-Examination (Resumed)

By Mr. Littman:

Q. Mr. Hinton, will you please turn to Page 31 of your Exhibit No. 42, on which page you set forth the capital additions which you estimate will be required to be installed in that year in order to meet the so-called anticipated load?

In Item "f" on that page, you provide for the construction of well lines to connect 20 new wells in the Hugoton Field, costing \$63,913. Will you please describe those facilities?

A. The additions under caption "f", Page 31, Exhibit 42, are well lines which will be required to connect wells that will be drilled during the year 1946, 10 of which are located in Texas County, Oklahoma, and 10 in the Kansas portion of the Hugoton Field.

